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An Economic Analysis of New York City's Mitchell-Lama Housing Program

Joseph S. DeSalvo

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PREFACE

This study of New York City's Mitchell-Lama housing program measures the costs and benefits of the program to its tenants, to the City, and to others, including the owners of property in the environs of Mitchell-Lama projects. It shows how these costs and benefits are affected by choice of sites and by real estate tax exemptions granted by the City, and how the benefits of the program are distributed among tenants in different income groups and of different family sizes. It recommends a site-selection policy designed to increase the net benefits of the program and tenant-selection policies designed to redistribute benefits to larger, lower-income families.

A companion study by Barbara M. Woodfill, *New York City's Mitchell-Lama Program: Middle Income Housing?*, R-786-NYC, analyzes recent changes in the characteristics of families living in housing projects built under this program and relates these trends to program objectives, suggesting changes in tenant eligibility rules and a method for monitoring tenant characteristics in the future.

This study was undertaken in 1968 at the request of the Housing and Development Administration, and its principal findings and recommendations were briefed to City officials in February 1969. Other research for HDA interfered with the preparation of the written report, finally submitted in draft to HDA in November 1970. Although the most recent data about the Mitchell-Lama program included here are for 1968 (except for some data on assessed values and property taxes for the fiscal year 1968-1969), the issues raised and the recommendations made are still pertinent.

Many people contributed to this study. The following HDA personnel provided data on the Mitchell-Lama program and explanations of the program's operation: Morton Price, Rhoda Radisch, Tony Sanders, and Morris Sweet. Frank Kristof, formerly of HDA and now Housing Program Officer of the New York State Urban Development Corporation, and David Talmas of HDA provided the important market rent estimates. Ann Hargrove, formerly of HDA and now with Candeub, Fleissig and Associates, was particularly helpful in conceptualization and data gathering in the early stages of the study. Several Rand colleagues contributed to data gathering efforts and provided penetrating critiques of the study's methodology. In particular, thanks are due Joan Hendrickson, Ira Lowry, Joseph Newhouse, Edgar Olsen, Thelma Palmerio, Peter Rydell, James Stucker, and Michael Teitz. Barbara Woodfill of Rand deserves a particular debt of gratitude for her substantial help at every stage of the study. William Allen, Kenneth Gorham, and Al Rosenthal of Rand provided assistance in data handling and programming.

SUMMARY

This Report presents a benefit-cost analysis of New York State's Limited Profit (Mitchell-Lama) housing program as it has operated in New York City. Under State enabling legislation, both City and State agencies supply long-term, low-interest mortgage funds to private developers of "middle-income" housing. The City gives additional assistance in the form of partial-to-full exemption from real property taxes. The construction, management, rent schedules, return on equity, and tenant-selection policies of each developer are supervised or regulated by either a City or State agency, depending on the source of mortgage funds.

Several policy issues concerning the Mitchell-Lama program have engaged the City's attention. Of these, the most important are site selection (Where should projects be put?), tenant selection (Who should live in the projects?), and tax exemption (How much exemption should be granted projects and how much does this cost the City?). We address these issues in our analysis.

Our general findings with respect to benefits are that the 123 City and State projects as of June 1968 produce $123.6 million a year in benefits (in the form of housing services) to project tenants. This amounts to $2171 per year on average for each of the 56,923 units. Of this total the tenants themselves provide $84 million as rents for their apartments, or $1476 per unit. The remainer, which we call net tenant benefits, amounts to $39.6 million or $695 per household on average.

A comparison of benefits produced by State and City projects, which are administered by different agencies, reveals that in total the City produces more tenant benefits, $64 million, than the State's $59.5 million. On a per-unit basis, however, we find that State projects produce over $150 more annually than do City projects because State projects provide much larger net tenant benefits per unit ($791) than City projects ($612).

Another benefit that results from Mitchell-Lama projects is neighborhood upgrading. From analyzing a sample of 62 City projects, we find that, on average, neighborhoods in which projects are located have

increased their assessed valuation annually by 9.89 percent of their base-year assessed valuation, whereas control areas increased only 4.64 percent annually. Although this neighborhood effect exists, we are unable to express it in monetary terms as we do tenant benefits.

On the cost side, we find it requires $131 million annually to operate the 123 Mitchell-Lama projects in occupancy in June 1968, or $2300 per year for the average apartment. Of this total, the tenants contribute $84 million or $1476 per unit on average. Nontenants contribute $47 million, $824 per unit, or 36 percent of the total. The City contributes nearly half of this subsidy; and the other half is contributed by the Federal taxpayer and by project owners.

City-supervised projects require some $4 million more in annual cost than State projects. There are about 4000 more units in City projects than in State projects, however, resulting in a higher cost per unit for State projects -- $2399 as opposed to $2214 for City units. Although the totals differ slightly, the cost components differ more dramatically between City and State projects. Annual project rents per unit average nearly the same for both City and State projects, $1488 and $1461 respectively, but nontenant contributions are over $200 per unit higher for State projects. And the burden of nontenant contributions is distributed differently as well. State projects involve less City cost per unit than City projects ($341 versus $446), but that part of nontenant contributions not borne by the City is much higher for State than for City projects ($597 as opposed to $260 for an average unit).

Putting benefits and costs together, we find that it requires $7.3 million in additional benefits over the amount we calculated to be sure that the Mitchell-Lama program is an economic use of resources. The total, which is about equally divided between City and State projects, amounts to $129 per unit per year. As explained in the text, this kind of finding should not be regarded as unique to the Mitchell-Lama program. Rather, it is a characteristic of any subsidy in kind that the cost of providing that subsidy will most likely be more than the value placed on it by the recipients. Thus, to justify any subsidy-in-kind program, like housing, benefits other than those accruing directly to participants must exist. In fact, we have indicated that at least one class of such benefits does exist for the Mitchell-Lama program: neighborhood upgrading. Others may also exist. It is ultimately up to the City administration, however, to decide whether it believes the Mitchell-Lama program is a better approach to improving the welfare of its participants than would be a cash grant equal to the value of all nontenant contributions.

In addition to these general findings, we examine the effect of project location on benefits and costs. Other things being equal, the City should prefer to locate projects in areas where its tax loss would be least. This occurs for City projects located in market areas where the Mitchell-Lama units or other similar apartments would command an average of \$55-\$64 per room on the open market in 1968. It occurs for State projects located in the \$45-\$54 rent class. Thus, it seems that the least-cost location in terms of tax revenue lost would be in the areas where equivalent housing could command \$45 to \$64 per room per month on the private market.

If locations are selected on the basis of a comparison of total resource cost and tenant benefits rather than on City cost alone, medium-quality neighborhoods are still preferable. And this preference is further reinforced by our finding that neighborhood upgrading is much more likely to result from projects located in medium-quality neighborhoods. It appears that no case can be made for locating Mitchell-Lama projects in either the poorest areas, in the hope of eliciting the greatest upgrading or causing the least City cost, or in the very best areas, in the interest of creating the most tenant benefits. Rather, considerations of tenant benefits, upgrading effects, resource cost, and City cost lead to the same policy: locating projects in medium-quality areas.

To discover whether or not the Mitchell-Lama program is meeting the needs of its target population, we examined the distribution of tenant benefits by tenant income and family size, as well as by age and sex of household head. These analyses are based on a sample of 4231 households occupying the newer projects, so our findings may not pertain to older projects. We summarize only findings for income and family size.

When we look at income alone, we find that families with incomes under $4000 account for 5 percent of all tenant households and receive about 5 percent of all benefits. Those with incomes between $4000 and $10,000 occupy about 59 percent of all units but receive only 48 percent of all benefits. Finally, households with incomes of $10,000 or more occupy 36 percent of all units but receive 47 percent of all benefits. In other words, benefits per family increase with family income.

Considering family size alone, we find that the program provides most of its units (58 percent) to families of one or two persons, but these receive only 46 percent of all tenant benefits. Families of three or four persons occupy 37 percent of all units and receive 47 percent of all benefits. Families of five or more persons occupy only 5 percent of all units and receive nearly 8 percent of all benefits.

Cross-tabulating income and family size, we find that virtually all tenant families with incomes under $4000 consist of one or two persons (about 5 percent of all sample families). In the $4,000 to $10,000 range of income, nearly 71 percent consist of one or two persons (about 42 percent of all sample families). Only among families with incomes of $10,000 or more do the majority (68 percent) consist of three or more persons (about 24 percent of all sample families); these large upper-income families are the only ones whose benefits are substantially above the sample-wide average.

The program, as represented by our sample, thus presents a curious performance with respect to its presumptive target population. Instead of supplying most of its units and benefits to middle-income families with several children, it favors small families and large upper-income families.

Our findings lead to two policy recommendations: (1) Where possible, locate future Mitchell-Lama projects in medium quality areas; (2) Reorient the program to serve middle-income families with children by (a) revising admission standards, (b) providing more two- and three-bedroom units in new projects, (c) making more units available for larger families in existing projects, and (d) exercising more control over eligibility of families after their admission to the program.

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I. INTRODUCTION

THE MITCHELL-LAMA PROGRAM

The Limited-Profit Housing Companies program, conducted both by the State and by individual municipalities, permits the construction or rehabilitation of cooperative or rental housing by private sponsors with public assistance and supervision.* The legal basis for the program is the Limited-Profit Housing Companies Law, passed by the New York State Legislature and enacted in 1955. It is popularly known by the surnames of the State legislators who sponsored the enabling legislation. Public assistance takes the form of low-interest, long-term loans; property tax exemptions; and restricted return on equity. Public supervision is exercised over construction, management, and tenant selection.

Eligible developers include commercial investors, cooperative associations, and nonprofit membership corporations. A commercial developer must provide an equity investment equal to 10 percent of project costs, with the remaining 90 percent supplied by the State or the City in long-term (up to 50 years) mortgage loans at interest rates below those available on the private market. Cooperative and nonprofit membership corporations sponsoring housing for hospital or college staffs may receive 95-percent loans; nonprofit membership corporations sponsoring housing for the aged may receive 100-percent loans under a 1967 amendment.

A distinction is made between City and State projects depending on who finances and supervises the development. State financing of limited-profit housing draws on bond issues of State agencies. These funds are available for Mitchell-Lama housing throughout the State,

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*This section draws on the following sources: Committee on Housing Statistics, *Housing Statistics Handbook: Basic Housing Statistics, The City of New York*, November 1967; D. Dreyfuss and J. Hendrickson, *A Guide to Government Activities in New York City's Housing Market*, The Rand Corporation, RM-5673-NYC, November 1968. The law is contained in Sec. 44B, Art. II., of W. M. McKinney (ed.), *The Consolidated Laws of New York State Annotated*, Vol. 41, Edward Thompson Co., Brooklyn, New York, 1962.

but the bulk of the money has been allocated to New York City. City financing is provided by mortgage loans from the City's Housing and Development Administration (formerly the Housing and Redevelopment Board). HDA obtains these funds from City bond issues and sets the developer's interest rate to cover borrowing costs incurred by the City.

In addition to long-term, low-interest mortgages provided by either the State or the City, projects are eligible for exemption from real-property taxes. All projects sponsored by nonprofit membership corporations receive full tax exemption. For others, tax exemption is for 30 years and up to 50 percent of assessed value. In 1967 the State Legislature changed the law that limited the percentage tax exemption to 50 percent to permit up to a 100-percent tax exemption on the value of improvements created by the project. It was provided, however, that the remaining tax liability be at least equal to 10 percent of the annual shelter rent receipts. Shelter rent is total rent less charges for electricity, gas, heat, and other utilities.

In return for these benefits, the sponsors must agree to State or City supervision of construction and management costs, including tenant selection and schedules of rents and carrying charges. Rent schedules are determined to provide the sponsor with a 6-percent return on equity. HDA is the supervisory agency for the City; the State Division of Housing and Community Renewal and the State Housing Finance Agency provide supervision for the State.

Tenant eligibility is determined by income and family size. The law specifies that a Mitchell-Lama household's income must not exceed six times the annual rent (seven times if there are four or more persons). While the law itself states its purpose as correcting emergency conditions resulting from a severely inadequate supply of safe and sanitary housing for low income families and aged persons, it is generally accepted that the program is intended to benefit middle-income families and especially those with children.*

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*Apparently, the wording of the law reflects a provision in the New York State Constitution that stipulates the legislature may supply funds only for slum clearance or low-rent housing for low-income persons. See McKinney, Vol. 44, Art. 8, Sec. 1 of the Public Housing Law. Nevertheless, City reports consistently refer to the

At the end of 1967 State projects amounting to 56,000 units were planned for construction in New York City. Of these 26,000 (46 projects) had been completed at a cost of $472 million by June 1968. The remaining 30,000 are estimated to cost another $601 million. To June 1968, 77 City-financed and supervised projects had been completed with some 31,000 dwelling units at a cost of over $550 million. Fifteen additional projects were planned or were in various stages of execution as of June 1968.

In summary, the Mitchell-Lama program provides housing intended for middle-income families through the use of low-interest, long-term mortgages to private developers; real-property tax exemptions on projects; restrictions on return on equity; and supervision of construction, management, and tenant selection. Projects may be either State or City supervised depending on which governmental unit supplies the mortgage funds. Both State and City projects in New York City amount to about 57,000 dwelling units with 34,000 units in planning or execution.

POLICY ISSUES

Several interrelated policy issues concerning the Mitchell-Lama program have engaged the City's attention. Of these, the most important are site selection, tenant selection, and the amount of real estate tax exemption to be granted to individual projects.

Site Selection

It is current HDA policy to select sites for projects in poorer market areas, apparently for two main reasons: to upgrade such

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program as middle-income housing or discuss it under that heading. See, for example, L. Winnick and F. S. Kristof, *The City Mitchell-Lama Program: Tenant Selection Policies*, Report No. 2, the Housing and Redevelopment Board, City of New York, April 11, 1961; W. L. Rafsky, *Publicly Assisted Housing*, Institute of Public Administration, September 1966; *Report of the Task Force on Mitchell-Lama Housing*, Housing and Development Administration, January 31, 1967.

neighborhoods and to avoid preempting private development.*

It is believed that Mitchell-Lama projects tend to upgrade neighborhoods in poorer market areas, where "upgrading" means a general improvement, perhaps through new construction or rehabilitation. It is felt that upgrading is less effective in better areas. While it is plausible that construction of new high-quality apartment buildings in a given neighborhood would encourage the owners of surrounding parcels to improve or redevelop their holdings, this theory has been accepted as the basis of policy without systematic supporting evidence. (Of course, specific evidence for the Mitchell-Lama program in New York City could not possibly be obtained in advance of program implementation.)

HDA thinks that location of projects in better market areas rather than poorer ones is more likely to preempt private development. Preemption is considered undesirable for two reasons. First, the City wants to add to the efforts of private developers rather than substitute for them, in order to gain the maximum amount of new housing. Second, a private development yields real estate taxes from which Mitchell-Lama projects are partially or wholly exempted. It is felt that where no development would otherwise occur (in a poorer market area), granting tax exemption to encourage a Mitchell-Lama project does not result in a real tax loss to the City and, if the exemption is partial, may even result in a net increase in tax revenues.

The preemption argument is based on local rather than market-wide reasoning: Given a particular site with strong appeal to private developers, its preemption by the Mitchell-Lama program forestalls the private development of that site and consequently reduces total private housing development. One could plausibly argue either (a) that the same amount of private development would occur elsewhere, or (b) that,

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*Some implications of this policy are discussed in Rhoda Radisch, *The City's Limited-Profit Housing Companies Program: An Evaluation and Projection, 1957-70,* Housing and Redevelopment Board Report No. 13, January 1966. Also, see *Rising Rents and Housing Costs in the City-Financed Limited-Profit Housing Companies Program: 1957-1967,* Housing and Redevelopment Board, Bureau of Planning and Program Research, Occasional Memorandum No. 19, September 1, 1967.

regardless of its location, new Mitchell-Lama housing satisfies a part of the total housing demand and therefore reduces the demand for private housing. Neither the preemption argument nor either of these alternatives has hitherto been subjected to careful logical or empirical test.

Tenant Selection

Another major policy issue is tenant selection: who should live in Mitchell-Lama units? As explained earlier, the program is intended primarily for middle-income families, especially those with children. When the program was enacted into law, it was believed a "housing gap" existed which was not being filled by either publicly-aided or private housing. The Joint Legislation Committee on Housing and Multiple Dwellings found that public housing, which served low-income families, was provided at rentals between $8 and $14 per room monthly in 1955. Private builders, however, were apparently unable to produce housing at less than $34 per room per month, which was felt to be beyond the reach of middle-income families.[*] Thus, there was believed to be a need for publicly-aided housing for middle-income families. In addition, there was the desire to retain middle-income families in the City rather than lose them to the suburbs. Within the broad category of middle-income families, specific groups have sometimes been singled out for aid: families with children, ethnic minorities, elderly persons, and hospital and university staffs.[**]

Given that the goal of the Mitchell-Lama program is to aid middle-income families, then an important question is whether or not the program is achieving its goal. That the City has been concerned with this question is indicated by some of the studies cited earlier. However, the issue is still in doubt. This study shows how benefits are distributed among tenants, by income, household size, and age and sex of household head.

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[*] See quotations in McKinney, p. 8.

[**] See Winnick and Kristof.

Tax Exemption

A concomitant issue, involving both location policy and tenant selection policy, concerns the cost to the City of the Mitchell-Lama program. As mentioned earlier, the City grants partial (and sometimes complete) exemption from real property taxes to Mitchell-Lama projects. This is a City subsidy which is required, along with below-market interest rates and restrictions on return, to ensure that project rents are low enough for middle-income families. In the past, it has been necessary to increase the tax exemption of Mitchell-Lama projects in order to permit them, in the face of rising costs, to continue providing housing at reasonable rentals. When this happens, there is a hue and cry from non-Mitchell-Lama tenants and from those Mitchell-Lama tenants residing in projects not granted increased tax exemptions. Clearly, it would be to the advantage of the City to keep tax exemptions at a minimum consistent with program goals. At present, however, HDA does not have a clear idea how much tax exemption actually costs the City in lost revenue, or whether the cost of granting a dollar of tax exemption is the same for all projects.

BENEFIT-COST ANALYSIS

These, then, are the policy issues addressed in this Report. The major tool is benefit-cost analysis. By measuring all benefits resulting from a program or project and comparing them with the total cost of all resources expended, one can determine, in effect, the net social "profit" or "loss." This is a matter of interest to anyone viewing a project from a broad social viewpoint. To those more closely involved, it is equally important to know who gets the benefits and who pays the costs. Even if a project shows a net social loss, some participants may gain a net profit.

Some benefits and some costs are monetized and easily measurable as dollar magnitudes. Others are not. Consequently, formal benefit-cost analyses are seldom conclusive. This one is no exception. We are able, however, to narrow the range of debatable policy issues by accounting for most of the benefits and costs and to show what must be assumed about the unmeasured ones in order to justify existing or proposed policies with respect to site selection, tenant selection, and tax exemption.

ORGANIZATION OF THE STUDY

This Introduction has described the Mitchell-Lama program and some of the issues associated with it. Section II deals with the methodology and findings of our benefit-cost analysis for the program as a whole, and compares City-sponsored with State-sponsored projects. Section III considers the effect of project location on costs and benefits, and Sec. IV considers the distribution of tenant benefits by household characteristics. Section V offers some concluding remarks and policy recommendations.

To simplify the main text, much of the supporting information is placed in six appendixes, which contain the following information. Appendix A describes the measurement of tenant benefits, and Appendix B describes the estimation of the rent-income ratio needed for benefit measurement. Next, Appendix C contains data on City and State Mitchell-Lama projects built to June 1968. Then Appendix D has data on a sample of City Mitchell-Lama units. Appendix E contains information on the method and data used to measure neighborhood upgrading, and Appendix F contains tax exemption data used to measure City cost.

II. BENEFITS AND COSTS OF THE MITCHELL-LAMA PROGRAM

This section consists of four parts: a general discussion of the benefit-cost relationships used in our analysis; a description of the methodology and findings for benefits; a similar description for costs; and, finally, a reconciliation of the two.

Table 1 shows the relationship among concepts used throughout the study.

Table 1

BENEFITS AND COSTS OF HOUSING PROGRAM:
RELATIONSHIP AMONG CONCEPTS

Benefits	Costs
Gross tenant benefits	Project rent
Project rent	Tenant subsidy
Net tenant benefits	City cost
All other benefits	All other cost
Total benefits	Resource cost

BENEFIT-COST RELATIONSHIPS

Benefits

Mitchell-Lama tenants enjoy a flow of housing and related services as a consequence of their participation in the program. We call the dollar value (to the tenant) of these services *gross tenant benefits*. Typically, the tenant contributes to the cost of his unit by paying some rent, here called *project rent*. The difference between gross tenant benefits and project rent is *net tenant benefits*, the dollar value to the tenant of the Mitchell-Lama apartment over and above his own payment. *Other benefits* may flow from housing programs as well, benefiting both participants and nonparticipants. For housing programs in general these encompass such things as eliminating blight and slums, mitigating poverty, reviving downtown business areas, and achieving or maintaining a desirable and stable social structure in the central City. As discussed in Sec. I, Mitchell-Lama projects have from time to time been associated with neighborhood upgrading and retention of middle-income families. These types of benefits we lump together and call *other benefits*. Finally, *total benefits* are the sum of gross tenant and other benefits.

Costs

As used in our context, cost includes all payments to productive factors needed to provide housing services. This is the *resource cost*, which includes a return on capital or equity as well as other cost elements. Competitive housing market conditions would tend to force a dwelling unit's rent down to resource cost per unit. But the Mitchell-Lama program is intended to supply housing at less than market rent. To do this, the program must provide subsidies of one kind or another, for the resource cost cannot be avoided, only shifted. The difference between what the tenant pays, project rent, and what he would have to pay to occupy the unit on the private market is the *tenant subsidy*. Although quantities making up tenant subsidy may be looked at in several ways, we divide this category into *City costs* (borne as property tax exemptions) and *all other costs* (borne by the Federal taxpayer in Federal income taxes foregone on municipal bond financing of the projects and by project owners in revenue foregone due to restricted return as equity*). From the City's point of view, subsidies contributed by private persons or by other levels of government are "free"; its own contributions are "costs" to be explicitly considered in program decisions. We therefore distinguish "City costs" from "all other costs."

Special Benefit-Cost Considerations for Subsidized Housing

Usually when benefit-cost analysis is used in evaluating a public investment, total benefits are compared with total resource costs. The investment is said to be justified if benefits equal or exceed costs.

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*In cooperative Mitchell-Lama projects, this means that the true tenant contribution is larger than the project rent, i.e., tenants lose somewhat in their capacity as owners because of the restricted return on equity. The monthly payment made by cooperators is called a carrying charge rather than a project rent. We use the latter term for both situations.

If there were to be only one Mitchell-Lama project with only one class of family residing in it and if we could, in fact, measure all the benefits and costs, the usual procedure would be sufficient to evaluate the program. This is not the case, however, with the Mitchell-Lama program. First, it consists of many projects in various locations, and location powerfully affects the benefit-cost relationship. Second, many classes of families reside in Mitchell-Lama projects. Knowledge of the benefit-cost distribution among households is important to assess whether or not the program is serving middle-income families with children. Third, we cannot measure all the benefits from Mitchell-Lama projects. The effect of location on benefits and costs is taken up in Sec. III; that of the distribution of benefits and costs among tenants, in Sec. IV. We must now say a few words about the benefits we cannot measure.

We *can* measure gross tenant benefits and resource cost; then by subtracting gross tenant benefits from resource cost, we can determine the minimum amount of other benefits required to make total benefits equal total costs, even though the actual amount is unmeasurable. We call these *minimum other benefits*. If this minimum amount is small, say 5 percent or less of resource costs, then we can reasonably suppose that the program produces more benefits than costs. The implication is that resource cost is likely to exceed gross tenant benefits. This is not a unique feature of the Mitchell-Lama program. Indeed, it can be shown that any program that gives participants transfers in kind, like housing, rather than cash transfers may produce more costs than direct benefits to participants even when the program operates with maximum efficiency.* This happens because recipients of the transfer in kind would prefer to have the dollar value of that transfer in cash; cash transfers would give them more freedom of choice, which is typically worth something to them. Moreover, if we account only for the benefits to recipients of transfers, then we are omitting any benefits accruing to others, what we have called other benefits. Thus, by subtracting gross tenant benefits from resource cost, we obtain the minimum amount of other benefits required to justify the program, that is, make total benefits equal total costs. We present these findings later in this section. In Sec. III we examine the distribution of minimum other benefits by location.

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*See Appendix A for a proof of this assertion.

Also, we can roughly measure neighborhood upgrading due to Mitchell-Lama projects. To the extent that such upgrading occurs, we can identify nontenant benefits that add to program justification. We discuss the general findings regarding upgrading in this section and variations in the upgrading effect with location in Sec. III.

Finally, we present estimates of the City component of total resource cost. Such components are not usually measured separately in benefit-cost analyses, it being assumed that all costs are equally important no matter the source; but, as we shall see, the magnitude and distribution of City cost are important issues for City policymakers. We examine the general findings in this section. In Sec. III we look at how project location affects City cost.

BENEFITS

Methodology

Tenant Benefits. We measure net tenant benefits by estimating the amount of additional income a tenant would need to make him feel as well off without the program as with it. We measure gross tenant benefits by adding net tenant benefits to project rent. The sum is the total value of the housing services provided by the program.

It is safe to assume that a Mitchell-Lama tenant places a value on his housing that is at least equal to the project rent that he must pay; otherwise, he would not participate in the program. How much more than project rent is his apartment worth to him? In other words, how large are net tenant benefits? As we shall see below it is not safe to assume (as one might suppose) that net tenant benefits are equal to the difference between market rent and project rent. Rather, net tenant benefits are likely to be less than this difference, and gross tenant benefits are likely to be less than market rent.

Suppose a Mitchell-Lama household is suddenly required to pay market rental for its unit. Clearly the household cannot continue to occupy its former Mitchell-Lama lodgings *and* consume the same amounts of other goods unless its income were to increase sufficiently. Now, the question is how much additional income would the household need to be as well off without the program as with it? This question is not as simple as it sounds. If we gave the consumer the difference between the market rent and the project rent of the housing unit (i.e., if we gave him a cash grant equal to the tenant subsidy), he *could* buy back the same or identically priced unit as he occupied while participating in the program.

Actually, we could typically give him less money and still be sure that the household was as well off in terms of its own preferences than it was participating in the housing program. Consider that as a participant in the housing program, the consumer really had no choice about the level of his housing expenditure and, consequently, no choice about the total of all other expenditures. Now, suppose we offer him a cash grant and permit him to determine how it will be spent on housing and other goods. He would most likely choose different amounts of housing and other goods than he would consume under the program. This freedom of choice is worth something, and that is why the additional income required to make the Mitchell-Lama participant as well off without the program as with it is likely to be less than the amount necessary to permit him to rent the Mitchell-Lama (or identically priced) unit at market rental. If the Mitchell-Lama program has the same effect on the participant's consumption as would an unrestricted cash grant equal to the tenant subsidy, then the net tenant benefits would equal the tenant subsidy and gross tenant benefits would equal resource cost. Whether or not the Mitchell-Lama program produces this result or another is an empirical question that we address.

The correct formula for measuring net tenant benefits is presented in Appendix A. Its application requires knowledge of the following four variables: (1) the project rent, (2) the market rent of the Mitchell-Lama unit, (3) the tenant's current money income, and (4) the amount that the tenant would spend for housing without the program.

If we had observations on or estimates of these four variables for each household occupying a Mitchell-Lama unit, we could directly measure tenant benefits for each household. We were able to get average scheduled rents for apartments in each project, and two officials of HDA, familiar both with the Mitchell-Lama program and the City's local housing markets, helped us to estimate the average market rental values of apartments in each project. We could obtain exact unit-by-unit project rents for only a sample of 4231 Mitchell-Lama apartments. We also could only get income and other family characteristics for households occupying these sample units. Since estimating a non-participating household's housing expenditure requires knowledge of several household characteristics, we could make these estimates only for the sample households. Thus we did not have the requisite data to estimate net tenant benefits directly for all households and had to infer them from the sample data. The method for doing so and the sample data used are contained in Appendix D. The data on all projects are in Appendix C. Appendix B contains our method for estimating the nonproject rent-income ratio.

Neighborhood Upgrading. A complete analysis of housing benefits should consider possible benefits received by persons who are not actual tenants. Some previous attempts have been made to incorporate these benefits into an economic evaluation on both a theoretical and empirical level.* However, the conceptually satisfactory schemes are, at this early stage of their development, practically impossible to apply. At the other extreme are ad hoc methods for attempting to account for other benefits. By their very nature, these are tailored to specific problems.

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*For examples relevant to housing, see H. O. Nourse, "The Effect of Public Housing on Property Values in St. Louis," *Land Economics*, Vol. 39, No. 4, November 1963, pp. 433-441; F. G. Adams, G. Milgram, E. W. Green, and C. Mansfield, "Undeveloped Land Prices During Urbanization: A Micro Empirical Study over Time," *Review of Economics and Statistics*, Vol. 50, No. 2, May 1968, pp. 248-258; J. Rothenberg, *Economic Evaluation of Urban Renewal: Conceptual Foundation of Benefit-Cost Analysis*, The Brookings Institution, Washington, D. C., 1967; E. O. Olsen, "A Welfare Economic Evaluation of Public Housing," unpublished Ph.D. dissertation, Rice University, May 1968.

In our analysis we do not measure other benefits; although since we do measure gross tenant benefits and total resource cost, it is possible to discover the minimum of other benefits required to justify a project on benefit-cost grounds. These results are presented later. However, we do try to get an assessment of the existence and incidence of benefits associated with neighborhood upgrading.

It is often contended that construction of housing projects in poorer market areas upgrades such neighborhoods.* Unfortunately, there is little evidence that verifies this contention. The argument usually invokes a supposed "accelerator effect of public investments,"** i.e., that a given public investment will evoke additional private investment. The size of this accelerator effect is usually said to depend in an unknown way on the size, form, and location of the public investment vis-à-vis the affected area.

Any upgrading effect induced by public investment should tend to raise the values of surrounding properties. In fact, it is the measurement of this effect that is usually attempted in empirical work on neighborhood upgrading. What little empirical work there is, primarily, for public housing, has produced conflicting results. Nourse, for example, found no neighborhood upgrading effects due to public housing in St. Louis, while Grebler found positive upgrading effects for public housing projects on the Lower East Side of New York City.***

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*A classic quotation is: "One of the principal arguments, with which I go along, is that the establishment of a modern housing project in a city raises the assessed valuation for blocks around it and puts back onto the municipal tax rolls a great deal more money than is taken off by the land that is occupied by these public-housing projects." Congressman A. S. Mike Monroney, quoted in Nourse.

**For a discussion of the accelerator effect of public investment in housing, see W. R. Thompson, *A Preface to Urban Economics*, The Johns Hopkins Press, Baltimore, 1965, pp. 299-302.

***See Nourse; also L. Grebler, *Housing Market Behavior in a Declining Area*, Columbia University Press, New York, 1953, pp. 90-93. For a nonhousing example, see J. S. Golden, *Land Values in Chicago: Before and After Expressway Construction*, Chicago Area Transportation Study, October 1968.

Using a method similar to Grebler's, we measure the average annual percentage change in the neighborhood's assessed valuation over some period, then compare this figure with the average annual percentage change in assessed valuation for a control area. Finally, we perform a statistical significance test on the difference between the two rates of change. Detailed discussions of our method of measuring upgrading and the data employed are contained in Appendix E.

Findings

Tenant Benefits. Table 2 shows annual dollar benefits, in total and per unit, for all projects and for City and State projects separately. Gross tenant benefits are shown, as are project rent and net tenant benefits.

Table 2

ANNUAL TENANT BENEFITS OF MITCHELL-LAMA PROJECTS, 1968[a]

Benefit Category	All Projects		City Projects		State Projects	
	Total (In $ million)	Per Unit (In $)	Total (In $ million)	Per Unit (In $)	Total (In $ million)	Per Unit (In $)
Project rent	84.0	1476	45.5	1488	38.6	1461
Net tenant benefits	39.6	695	18.7	612	20.9	791
Gross tenant benefits	123.6	2171	64.1	2101	59.5	2252

[a] Figures may not add to totals due to rounding.

As of June 1968, the 123 Mitchell-Lama projects were producing $123.6 million a year in tenant benefits. This amounts to $2171 per unit. Of this total the tenants themselves provide $84 million, about 68 percent. Net tenant benefits amount to $39.6 million dollars annually or $695 per unit. On average, then, each tenant would have to be given $695 per year in cash to be made as well off without the program as he is with it. This is a real income increase amounting to about 7.8 percent of the average tenant's actual money income.[*] Of course some participants receive more than this and some less depending on their household characteristics and on project location, as discussed in Secs. III and IV. Since the average unit rent is $1476 per year, the net tenant benefit is seen to be nearly half as large as the tenant's own contribution. It seems safe to conclude that Mitchell-Lama tenants are enjoying substantial benefits, at least on average.

A comparison of benefits produced by State and City projects reveals that in total the City produces more gross tenant benefits, $64.1 million, than the State's $59.5 million. On a per-unit basis, however, we see that State projects produce over $150 more annually than do City projects because the State provides much larger net tenant benefits per unit ($791) than the City ($612). The reasons for this are higher market rents and lower project rents for State projects. Clearly the greater the gap between market rent and project rent, the greater the tenant's perception of the bargain he is getting. Despite these differences, it is evident that both City and State Mitchell-Lama projects provide substantial benefits to participants.

Neighborhood Upgrading. We have also estimated the neighborhood upgrading effects of Mitchell-Lama projects. We base our conclusions on a sample of 62 City projects in 51 neighborhoods,[**] but it seems reasonable to believe that whatever conclusion we come to for the sample should apply to other City projects and State projects as well.

The finding is that indeed neighborhood upgrading does result from the construction of Mitchell-Lama projects. We find that on average the neighborhoods in which projects are located have increased their assessed valuation annually by 9.89 percent of their pre-Mitchell-Lama assessed value. The average percentage increase in the assessed valuations of control areas was found to be 4.64 percent.[*] The extra 5.25 percent growth in assessed valuation for Mitchell-Lama neighborhoods is statistically significant at the 5-percent level, which means that there is only one chance in twenty that the neighborhood increase is not greater than the control area increase, i.e., that we are witnessing only a chance occurrence.

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[*] Based on an average income of Mitchell-Lama households of $8890 in 1968 dollars.

[**] Discussed in Appendix E.

These figures represent fairly strong evidence that there are positive neighborhood effects around Mitchell-Lama projects, although one cannot be sure that these projects caused the observed upgrading. Causality is always hard to pin down, but at least the evidence supports the hypothesis of Mitchell-Lama upgrading. The upgrading effect is not uniform over all projects, but this is an issue to which we shall return in Sec. III.

COSTS

Methodology

As discussed earlier, resource cost is the payment to all productive factors needed to provide the flow of housing services. This cost is borne by Mitchell-Lama tenants, in their project rents, and by nontenant contributors, in the form of various subsidies. Recall that the value of all nontenant contributions was called the tenant subsidy. We divide nontenant contributions into those made by the City and those made by all others. Our approach is to measure total resource cost and City cost; therefore, all other cost is determined as a residual by subtraction without the necessity of measuring it. Of course, once resource cost and project rent are known, we know the tenant subsidy as well since it is the difference between them. We turn now to the measurement of total resource cost and tenant subsidy. After this we discuss the measurement of City cost.

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[*] These are not compound percentage growth rates but, rather, represent that percentage of a base-year assessed valuation which was added each year on average over a period of years.

Resource Cost. Under competitive conditions in any market, price tends to equal the average cost of production, including a competitive return to capital. The same is true of a housing market. Thus, we do not need to measure cost if we know the competitive rental of housing units.* This may be true of privately owned and operated housing, but is it true for publicly-aided housing, such as Mitchell-Lama projects? The answer is yes, if Mitchell-Lama projects are built and operated as efficiently as nonpublicly-aided housing. We assume this to be so. Mitchell-Lama projects are constructed by ordinary private builders under contracts let by competitive bidding and with close inspection of performance. Projects are mostly operated by cooperative associations, labor unions, and other nonprofit organizations, and their books are audited by HDA accountants. There has been continual upward pressure on building and operating costs in New York City, probably encouraging efficient operations; and increases in rents for Mitchell-Lama units have not been granted perfunctorily. Thus, we assume that the resource cost of Mitchell-Lama housing is no higher than that for similar housing produced by a private, profit-making firm, and can be reasonably approximated by their rental value on the open market.

Tenant Subsidy. The tenant subsidy is the part of resource cost borne by nontenant contributors. Project rent is that part of resource cost borne by the tenant. Now, since we have argued that market rent equals the resource cost for Mitchell-Lama units, then the tenant subsidy is merely the difference between the market rent and the project rent of a Mitchell-Lama unit. Hence, to measure the tenant subsidy, we need only know market rent and project rent. Appendix C contains data on project rents for all Mitchell-Lama projects. Market rents, of course, must be estimated as we have discussed before. These estimates are also contained in Appendix C.

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*Strictly speaking, we must also assume housing is a constant cost industry because our estimates of market rent are constants for each project rather than functions of housing quantity. There is evidence favorable to this assumption for housing. See R. Muth, "The Demand for Nonfarm Housing," in A. C. Harberger (ed.), *The Demand for Durable Goods*, University of Chicago Press, Chicago, 1960.

In addition to measuring the resource cost and the tenant subsidy, we want to be able to distinguish that portion of total resource cost contributed by the City.

City Cost. As discussed in Sec. I, the City provides real-property tax exemptions to City and State Mitchell-Lama projects. In addition, for City projects, the City provides long-term, low-interest loans. These comprise the City's only subsidies to the Mitchell-Lama program.

Actually, aside from the program's administrative costs, the tax exemption seems to be the only real cost to the City. The long-term, low-interest loans are obtained by floating municipal notes and bonds. Since income from these securities is exempt from Federal income taxation, they are marketable at lower interest rates than comparable quality nontax-exempt securities. The loans are made to developers at the same rate of interest as the City must pay, plus a small additional administrative service charge. The City incurs no cost in this process, except for the possible upward pressure on interest rates it must pay for other borrowing; rather it is the Federal Government that foregoes the tax revenue on municipal bond interest payments. The property tax exemption, however, represents lost revenue to the City and, therefore, a real cost. So we measure City cost by the amount of property tax revenue foregone on the Mitchell-Lama project.* For example a Mitchell-Lama project that would pay $200,000 annually in property taxes as a full taxpaying property will pay only $100,000 if it has a 50-percent exemption. The cost to the City, then, is $100,000 in tax revenues.

It has been argued by some that such tax exemption is a true cost to the City only to the extent that a Mitchell-Lama project preempts private development on a given site; if no private development would occur there in the absence of the Mitchell-Lama project, the City loses no revenue by exempting from taxation all or part of the value added by the Mitchell-Lama project. For this and other reasons, HDA policymakers have tried to avoid "preemptive" sites, locating projects in places judged unattractive to private developers.

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*Data contained in Appendix F.

If the preemption argument were correct, it would mean that our method of computing City costs would overestimate them for projects located on nonpreemptive sites, generally those in the poorer market areas of the City. There is no question that some of the sites in good market areas selected for Mitchell-Lama projects might otherwise have been redeveloped by private entrepreneurs without City assistance, and that some of the sites in poor market areas were unlikely to attract private redevelopment in the foreseeable future. By selecting sites of the latter kind, the Mitchell-Lama program can add to the assessed value of real estate in a particular neighborhood and, even with a 50-percent tax exemption, can conceivably increase the City's tax revenues from that neighborhood. In this limited frame of reference, we could say that the tax exemption enabling the project to be built "cost" the City nothing, or even that it was "profitable" to the City.

But these consequences do not necessarily translate into a City-wide gain in market value, assessed value, or tax revenues.* In theory, the aggregate market value of rental property should approximate its aggregate net operating revenue, capitalized at the rate of interest available on alternative investments of comparable risk. Only if the construction of a Mitchell-Lama project increases this aggregate net revenue should we expect any increase in market or assessed value.

We can shortcut this proposition a bit by noting that assessed values on multiple dwellings in New York City are in fact very closely related to the rent rolls of these buildings. (One sample, covering 311 rent-controlled buildings, shows a simple correlation of .984 between assessed values and total building rentals.**) So unless the construction of a Mitchell-Lama project somehow causes aggregate rent expenditures in New York City to increase, we would not expect it to cause aggregate assessed value to increase, and tax exemption on the project would mean a net reduction in tax revenue.

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*The author is indebted to Ira S. Lowry for suggesting the line of argument presented below.

**Based on analysis by NYCRI of unpublished data from the Office of Rent Control.

We argue that, in the absence of induced population growth, the principal effect of Mitchell-Lama construction is to divert rental revenues from existing structures to the new structures, rather than to increase total rent expenditures.* We think that total rent expenditures would change substantially only if aggregate consumer incomes were to change as a result of building the new project. The most plausible reason for an income change would be that Mitchell-Lama construction persuaded families who would normally choose to live in suburbs of New York City to live instead in the City itself, thus resulting in a net increase in total population and income.

This last possibility is, or course, one of the objectives of the Mitchell-Lama program: "to keep middle-income families from leaving the City." Only if this objective is spectacularly met could we conclude that the program would result in net increases in aggregate population, income, rent expenditures, market value and assessed values of rental housing, and real estate tax revenue. The success of the program in this respect is obviously not easy to prove or disprove. One study, comparing the characteristics of Mitchell-Lama tenants with those of families who had moved from the City to the suburbs concludes:

> To summarize, the Mitchell-Lama program of the early 1960s was serving a clientele whose size and income characteristics overlapped considerably those of families who moved to the suburbs in the same period. About half of the movers would have been eligible for Mitchell-Lama housing, and about 15

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*Technically speaking, this is equivalent to the assertion that the demand for housing in New York City has approximately unitary price elasticity -- that is, a 1 percent increase (decrease) in the price of housing is accompanied by a 1 percent decrease (increase) in the quantity demanded, so that to market the additional quantity of housing represented by the new project, other housing must either be vacated or else rentals in general must fall, with total expenditures for housing remaining constant.

The correctness of this assertion for American consumers is a much-researched empirical question. A good deal, though not all, of the evidence is consistent with our assumption that the price elasticity of housing demand is close to unity. For a summary of the literature on this subject, see F. de Leeuw, *The Demand for Housing: A Review of Cross-Section Evidence*, The Urban Institute, Working Paper 112-14, March 20, 1970.

> percent might well have been interested in the Mitchell-Lama alternative. While the program, if expanded, might have prevented a small part of the exodus, other measures (particularly improved employment opportunities and better schools) would have been more responsive to the reasons given by the movers for leaving the City.*

Although we are unable to settle conclusively the question, whether the full value of a Mitchell-Lama tax exemption is always an accurate measure of the cost incurred by the City, we have not seen any substantial evidence to the contrary; furthermore, we think that the usual argument that the choice of "nonpreemptive" sites reduces City costs is clearly wrong because of its limited frame of reference. So we will take the conservative position and treat the full amount of Mitchell-Lama tax exemptions as City costs.

In summary, we measure cost by the estimated market rental, tenant subsidy (i.e., all nontenant contributions to total resource cost) by the difference between estimated market rental and project rental, and City cost by the dollar value of the tax exemption.

Findings

Table 3 displays the annual costs of the Mitchell-Lama Program.** Cost figures are presented as totals and per dwelling unit for all projects and for City and State projects separately. Total annual resource cost is divided into project rent and tenant subsidy; tenant subsidy, in turn, is separated into City costs and all other costs. Table 4 presents the cost components as percentages of resource cost. This is to help facilitate the comparison among costs.

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*Barbara M. Woodfill, *New York City's Mitchell-Lama Program: Middle-Income Housing?*, R-786-NYC, New York City Rand Institute, June 1971, Appendix A.

**Data on the 77 City and 46 State projects are in Appendix C.

Table 3

ANNUAL COST OF MITCHELL-LAMA PROJECTS, 1968[a]

Cost Category	All Projects		City Projects		State Projects	
	Total (In $ million)	Per Unit (In $)	Total (In $ million)	Per Unit (In $)	Total (In $ millon)	Per Unit (In $)
Project rent	84.0	1476	45.4	1488	38.6	1461
Tenant subsidy	46.9	824	22.1	726	24.8	938
City cost	23.2	408	14.2	466	9.0	341
Other cost	23.7	416	7.9	260	15.8	597
Resource Cost	130.9	2300	67.6	2214	63.4	2399

[a] Figures may not add to totals due to rounding.

Table 4

DISTRIBUTION OF RESOURCE COST FOR MITCHELL-LAMA PROJECTS, 1968

(In percent)

Cost Category	All Projects	City Projects	State Projects
Project rent	64	67	61
Tenant subsidy	36	33	39
City cost	18	21	14
Other cost	18	12	25
Resource cost	100	100	100

It requires $131 million annually to operate the 123 Mitchell-Lama projects in occupancy as of June 1968, or $2300 per year for each of the 56,923 units. Of this total, the tenants contribute $84 million or $1476 per unit on average, 64 percent of the total resource cost. Nontenants contribute $47 million, $824 per unit, or 36 percent of the total. The City contributes nearly half of this subsidy; the Federal taxpayer and project owners contribute the other half.

City projects require some $4 million more in annual resource cost than State projects. There are about 4000 more units in City than in State projects, however, resulting in a higher resource cost per unit for State projects: $2399 as opposed to $2214 for City units. Although the totals differ slightly, the cost components differ more dramatically between City and State projects. Project rents per unit average nearly the same for both City and State projects, $1488 and $1461 respectively, but the tenant subsidy is over $200 per unit higher for State projects. And the burden of nontenant contributions is distributed differently as well. State projects involve less City cost per unit than City projects do ($341 versus $466), and that part of tenant subsidy not borne by the City is much higher for State than for City projects ($597 as opposed to $260 for an average unit). Despite these differences, the major cost components as a percentage of resource cost do not differ appreciably between City and State. Rent is 67 percent of resource cost for City projects and 61 percent for State projects. The tenant subsidy amounts to 33 percent and 39 percent of resource cost for City and State. Again, however, the dramatic difference is the relation of City cost to other cost for City and State projects. City cost amounts to only 14 percent of resource cost for State projects but to 21 percent for City projects.

Some differences between City and State projects can be explained, but others cannot. The difference in tenant subsidy per unit is due in part to the State's generally lower project rents, but most is due to its higher market rentals. As discussed later, these higher market rentals occur because State projects are located in better market areas. We are unable, however, to explain why the State projects achieve lower project rents. If the difference is due to lower construction and operating costs, our data cannot confirm or deny the hypothesis, for we have assumed all projects are built and operated as efficiently as those on the private housing market. Settlement of this issue would require a detailed comparative cost analysis, which we have not performed.

The disparity of about $120 per unit in City cost between City and State projects may result from either differences in percentage exemption (i.e., State projects have lower exemption rates) or differences in assessed valuation (i.e., State projects have lower assessed valuations). Assessed values per unit for City and State projects were calculated, and absolutely no indication of differential treatment was found. The culprit would appear to be differences in exemption rates. Our data include all changes in exemptions in effect as of July 1968. Before that date, Mitchell-Lama projects received no exemptions greater than 50 percent, except for a few hospital-sponsored projects. As of July 1968, however, only City projects had received increases in their tax exemptions. Thus, it appears that the City-State differences in City cost are due to the rate of exemption rather than to other factors. Since it is expected that State projects will also receive increased exemptions, we should expect to see City cost rise for these projects.

In summary, Mitchell-Lama projects in occupancy as of June 1968, cost $131 million dollars a year, of which about two-thirds is contributed by project occupants and one-third by nonoccupants. City and State projects differ somewhat in their rent and resource cost per unit but more dramatically in the amount of tenant subsidy and in the distribution of the burden of nontenant contributions as between the City and all others.

RECONCILIATION OF BENEFITS AND COSTS

We have seen estimates of gross tenant benefits and of resource cost. It was explained earlier that one would not expect gross tenant benefits to equal or exceed resource costs because of the in-kind nature of the transfer involved. If *total* program benefits in fact equal or exceed resource cost, this must be because the program creates other benefits that accrue to nontenants, such things as neighborhood upgrading. We have in fact seen that there is evidence to support the existence of neighborhood upgrading benefits, although we could not monetize these benefits. Whatever other benefits exist, we cannot monetize them either. However, we can estimate the minimum amount of these other benefits that must exist in order to claim that the Mitchell-Lama program is economically justified. We do this by subtracting gross tenant benefits from resource cost.

The amount of these minimum other benefits is, in a real sense, the "price" we pay for this kind of aid over a cash grant equal to the value of all nontenant contributions. It is ultimately up to the City administration to decide whether it believes the price is right.

Table 5 presents our estimates of minimum other benefits. Other benefits must be at least as great as $7.3 million a year in order to be sure that the Mitchell-Lama program is an economic use of resources in New York City, or about six percent of resource cost. The total, which is nearly equally divided between City and State projects, amounts to $129 per unit per year. Notice that the minimum other benefits are larger, in total and per unit, for State projects than for City projects. This primarily reflects the larger resource cost of locating State projects in better market areas than City projects. We return to this issue in Sec. III.

Table 5

MINIMUM OTHER BENEFITS REQUIRED TO JUSTIFY THE MITCHELL-LAMA PROGRAM ECONOMICALLY, 1968[a]

Project	Minimum Other Benefits	
	Total (In $ million)	Per Unit (In $)
City	3.5	114
State	3.9	147
All	7.3	129

[a] Figures in total column do not add because of rounding.

III. EFFECT OF LOCATION ON BENEFITS AND COSTS

The totals and per-unit figures given in Sec. II indicate the overall cost and benefits of the Mitchell-Lama program. These figures hide interesting aspects related to an important policy issue: the effect of project location on benefits and costs.

It may not be immediately obvious that benefits and costs will, in fact, vary with location, and perhaps a word on why variation occurs is in order. On the cost side, land in better areas of the City commands a higher price and thereby imposes greater resource costs on projects so located. Moreover, since the City grants varying amounts of real property tax exemptions to projects, City costs may vary with location, depending on the exemption policy followed.

On the benefit side, gross tenant benefits will be greater for projects located in better areas simply because the value of a unit to the tenant is increased by better location. And if the amount the tenant pays for his unit does not vary systematically with location, we should expect to see net tenant benefits rise with better location. Finally, neighborhood upgrading effects may not be uniform across all locations; for instance, it may be that projects built in poorer areas produce the greatest upgrading effect.

Benefits and costs, therefore, will depend to some extent on project location. Since this is so, it may have implications for site selection policy. Clearly, from the social viewpoint, if all sites were equally costly, then a Mitchell-Lama project should be built on the site from which it would produce the most benefits. If benefits and costs vary with location, the greatest social advantage is obtained by selecting those sites where the project produces the most benefits over costs. This is true no matter who bears the cost. Since the City bears a portion of resource cost, however, a site that produces the most benefits over cost may not be the same site that results in the least cost to the City. The question then becomes whether the City chooses to produce the most benefits over total resource cost or over City cost. It may be that these two criteria are compatible, and our analysis should partially answer this question.

MARKET RENT AS MEASURE OF LOCATION DESIRABILITY

While location influences benefits and costs, its influence is not easily measured. As an indicator of the desirability of the area in which a project is located, we use the market rent estimates given in Appendix C. These figures were meant to represent the rentals that Mitchell-Lama projects could be expected to command if offered on the private housing market. Since a Mitchell-Lama unit in a desirable area would command a higher market rent than the same unit in a less desirable area, the market rent indicates the desirability of the area, although it is an imperfect indicator. Better quality units would command higher market rents than poorer quality ones in the same area, and to the extent that better quality units are located in more desirable areas, our indicator of the desirability of a location is biased. However, we do not believe the quality of Mitchell-Lama units varies significantly, much less systematically, with location.* It is also true that, other things equal, newer units would command more rent than older ones; however, only 11 of the 123 projects were occupied in 1960 or earlier. It is therefore unlikely that project age is an important determinant of market rent for Mitchell-Lama units. Despite the fact that market rent reflects a unit's quality and age as well as its location, we shall use the project's estimated average market rent per room to indicate location desirability.

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*Mitchell-Lama projects are built to stringent quality standards. See The City of New York Housing and Redevelopment Board, "Recommended Minimum Design Requirements for Limited-Profit Housing Projects to be Aided by Mortgage Loans from the City of New York Pursuant to the Provisions of the Limited-Profit Housing Companies Law," Bulletin No. 3, March 1, 1965, and "Standard Outline Specifications for Limited-Profit Housing Projects...," Bulletin No. 6, August 1, 1965.

PROJECT RENT BY LOCATION

Table 6 displays the distribution of project rent by market rent class for all Mitchell-Lama projects in occupancy in June 1968. Totals and per-unit figures are given for all projects and separately for City and State projects.

Table 6

ANNUAL PROJECT RENT BY ESTIMATED MARKET RENT, 1968

Estimated Market Rent ($/Room/Mo)	All Projects Total (In $ million)	All Projects Per Unit (In $)	City Projects Total (In $ million)	City Projects Per Unit (In $)	State Projects Total (In $ million)	State Projects Per Unit (In $)
25-34	18.7	1405	13.1	1363	5.7	1510
35-44	36.4	1491	17.7	1518	18.7	1467
45-54	12.1	1517	9.4	1533	2.7	1463
55-64	14.2	1499	3.0	1757	11.2	1442
65 and over	2.6	1495	2.3	1577	0.3	1075
All rents	84.0	1476	45.4	1488	38.6	1461

The totals, as one would expect, are roughly proportional to the number of units in each rent class. (See Table 21, Appendix C.) For all projects, the average project rents per unit do not show any systematic variation with rent class. City projects show an increase followed by a decrease in the highest rent category; State projects exhibit continual decrease. This indicates that households residing in more favorably located projects do not pay higher project rents for that privilege. Except for the poorest market area, project rents are lower on average for State than for City projects.

TENANT BENEFITS BY LOCATION

Of more interest from the point of view of tenant benefits is the distribution of net tenant benefits by market rent class. Table 7 contains these figures.

It is clear that apartments in better areas, as indicated by estimated market rent, are more highly valued by their occupants

Table 7

ANNUAL NET TENANT BENEFITS BY ESTIMATED MARKET RENT, 1968

Estimated Market Rent ($/Room/Mo)	All Projects		City Projects		State Projects	
	Total (In $ million)	Per Unit (In S)	Total (In $ million)	Per Unit (In $)	Total (In $ million)	Per Unit (In $)
25-34	2.2	164	1.6	167	0.6	157
35-44	11.5	471	5.5	474	6.0	469
45-54	7.8	976	6.1	1003	1.7	886
55-64	14.4	1519	2.1	1263	12.2	1576
65 and over	3.7	2134	3.3	2236	0.5	1612
All rents	39.6	695	18.7	612	20.9	791

than those in less desirable areas. Note the steady rise in average net tenant benefits per unit with market rent. As shown in Table 6, tenants in better areas are not charged more for their units, so the perception of the bargain they are receiving corresponds to the desirability of the location. Except for the $55-$64 class, City projects produce net benefits per unit as high or higher than State projects. The average State net benefits are some $180 larger than the City's, however, because the State has located 8028 of its units (30 percent) in the two best market areas while the City has located only 3165 units (10 percent) in those areas.

Table 8 brings project rent and net tenant benefits together by displaying the distribution of gross tenant benefits by market area. The figures represent the dollar value of Mitchell-Lama units to their occupants. Thus, we see that gross tenant benefits per unit range from nearly $1600 per year for units located in the poorest market class to over $3500 for those located in the most desirable areas. On average, Mitchell-Lama units are valued at over $2000 per year by the tenants occupying them. This amounts to some $124 million dollars a year.

Notice that gross tenant benefits are about equally divided between City and State projects, with the former producing $64 million and the latter about $60 million. Of course, the totals are distributed differently by rent class, but this mainly reflects the number of units occupying each rent class.

Table 8

ANNUAL GROSS TENANT BENEFITS BY ESTIMATED MARKET RENTS, 1968

Estimated Market Rent ($/Room/Mo)	All Projects Total (In $ million)	All Projects Per Unit (In $)	City Projects Total (In $ million)	City Projects Per Unit (In $)	State Projects Total (In $ million)	State Projects Per Unit (In $)
25-34	20.9	1569	14.7	1531	6.3	1667
35-44	47.9	1962	23.2	1991	24.7	1935
45-54	19.9	2493	15.5	2537	4.4	2349
55-64	28.5	3018	5.1	3021	23.4	3018
65 and over	6.3	3629	5.6	3812	0.8	2687
All rents	123.6	2171	64.1	2101	59.5	2252

NOTE: Figures from Tables 6 and 7 may not sum to figures in Table 8 due to rounding.

Finally, we note that the average gross tenant benefits per unit differ only slightly for City and State projects. This is true for each rent class except the highest. We saw in Tables 6 and 7 that City projects produce lower net tenant benefits and charge higher project rents on average than State projects; however, the State's lower project rents and higher net benefits tend to render about the same gross benefits in City and State projects. Bear in mind that the net valuation a tenant places on his unit is related to how much he must pay for it. Other things equal, a higher project rent lowers net tenant benefits. This is reflected in our City-State comparisons. Thus, tenants of City projects contribute proportionately more toward their total benefits than do tenants of State projects.

While State projects seem to be doing a slightly better job for all their tenants, it is clear that in general all Mitchell-Lama tenants are receiving substantial benefits. The State projects appear to do better because a greater proportion are located in the most favorable market areas. Location in better areas is not without its costs, however, a consideration to which we return later.

NEIGHBORHOOD UPGRADING BY LOCATION

Table 9 shows neighborhood effects by market rent class. The first column gives the annual average percentage change in assessed

Table 9

NEIGHBORHOOD EFFECTS OF CITY PROJECTS BY ESTIMATED MARKET RENTS

Estimated Market Rent ($/Room/Mo)	Change in Assessed Value (%/Yr)		
	Project Neighborhood	Control Area	Difference
25-34	3.59	4.33	-0.74
35-44	15.17	4.58	10.59[a]
45-54	12.81	4.85	7.96[a]
55 and over[b]	4.93	4.81	0.12
All rents	9.89	4.64	5.25[a]

[a] Significant at .05 level.

[b] Rent class $55-$64 and $65-and-over had to be combined to obtain a meaningful sample size.

value for the neighborhoods. The neighborhood column shows that all sample neighborhoods increased their assessed valuation at an average of about 10 percent per year. Neighborhoods in the middle-rent class grew considerably faster than those in the lowest and highest rent ranges. The control areas grew at lower rates on average except for the lowest rent category. Finally, the last column presents the difference between the control area changes and the neighborhood changes. A positive figure in this column means that the neighborhoods grew, on average, at faster rates than the control areas. Applying a one-tailed "t" test to the difference between means, we found that three out of five figures are significantly greater than zero.

These figures present fairly strong evidence that there are positive neighborhood effects around Mitchell-Lama projects, although one cannot maintain with assurance that these projects caused the observed upgrading. The presumed upgrading effect is present only in the mid-rent areas. Thus, it would appear that locating projects in the poorest neighborhoods does not ensure the greatest upgrading effect nor does locating them in the very best areas. If the goal of Mitchell-Lama policy were to produce the most neighborhood upgrading, then, other things equal, locating projects in medium quality areas would be appropriate.

It seems, therefore, we have a trade-off between tenant benefits and neighborhood upgrading benefits. The former are larger the better the area but the latter are present only in medium-quality areas. If costs were identical from location to location, this is a trade-off policymakers would seriously have to consider. Costs are not constant with location, however, and it is time we looked at the cost side of the equation.

TENANT SUBSIDY BY LOCATION

Under circumstances described previously, the tenant subsidy is a measure of all nontenant contributions. The amount of tenant subsidy in total and per unit for both City and State projects is shown in Table 10, as well as its distribution by market rent. The $47 million is about evenly divided between City and State projects. On a per-family basis, the subsidy amounts to over $800 per year. Some idea of the magnitude of this figure is gained by noting that it amounts to about 10 percent of the average annual income of Mitchell-Lama families and over 50 percent of their average annual project rent.

Table 10

ANNUAL TENANT SUBSIDIES BY ESTIMATED MARKET RENTS, 1968

Estimated Market Rent ($/Room/Mo)	All Projects		City Projects		State Projects	
	Total (In $ million)	Per Unit (In $)	Total (In $ million)	Per Unit (In $)	Total (In $ million)	Per Unit (In $)
25-34	2.6	195	1.9	199	0.7	186
35-44	13.6	559	6.5	562	7.1	556
45-54	9.2	1157	7.3	1189	2.0	1050
55-64	17.0	1801	2.5	1498	14.5	1868
65 and over	4.4	2530	3.9	2651	0.5	1911
All rents	46.9	824	22.1	726	24.8	938

Note that, although City and State projects require approximately the same total subsidy, the per-unit figures differ by over $200. This is due in part to the State's generally lower project rents, but most of the difference is due to higher market rentals.

Looking at the per-unit columns in Table 10, we see that the subsidy rises with higher market rents. The differences between City and State projects in the first two rent classes are slight. The greater per-unit subsidy for City projects in the third rent class is due exclusively to higher market rents on City projects. In the $55-$64 class the State has produced lower project rents and greater market rents requiring, as a result, much greater subsidy per unit. In the $65-and-over class, the larger per-unit subsidy for City projects is due to a much higher average market rent. Most City projects in this class are in Manhattan and have estimated market rents of $90 per room per month, whereas there are only two State projects in this class, with estimated market rents of $65 and $75 per room per month.

Table 10 indicates that nontenant contributions are much greater for units located in the better market areas. Since project rent does not vary systematically with location, we can be sure that resource cost increases with market rent class.

Now, we wish to display the distribution of resource cost by market rent class. This is done in Table 11.

Table 11

ANNUAL RESOURCE COST BY ESTIMATED MARKET RENT, 1968

	All Projects		City Projects		State Projects	
Estimated Market Rent ($/Room/Mo)	Total (In $ million)	Per Unit (In $)	Total (In $ million)	Per Unit (In $)	Total (In $ million)	Per Unit (In $)
25-34	21.3	1600	15.0	1562	6.4	1696
35-44	50.0	2049	24.2	2079	25.8	2022
45-54	21.3	2674	16.7	2723	4.7	2513
55-64	31.2	3300	5.5	3255	25.6	3310
65 and over	7.0	4026	6.2	4227	0.8	2986
All rents	130.9	2300	67.6	2214	63.4	2399

The total annual resource cost of the Mitchell-Lama program, $130.9 million, is about evenly divided between City and State projects. The totals by market rent class primarily reflect the number of units located in those rent classes. Thus, over 24,000 out of 57,000 units are located in areas where market rents per room per month are between $35 and $45 and, consequently, this class shows the largest resource cost total. Similar comments apply to the City and State totals by rent class. In addition, resource cost increases with the desirability of the location, other things being constant. This is illustrated by the per-unit columns of Table 11. Here we see resource cost per unit consistently rises with higher market rent classes. The only anomaly is the $65-and-over class for state projects.

MINIMUM OTHER BENEFITS BY LOCATION

Table 11 clearly displays the costs associated with better location. We know from previous tables that tenant benefits also rise with location. Therefore, it is unclear whether location of Mitchell-Lama projects in more desirable areas will produce the greatest excess of benefits over costs. Table 12 gives evidence on this issue. Recall that for the Mitchell-Lama program, gross tenant benefits can never exceed total resource cost. This is so ultimately because tenants typically value their units at less than the total cost of providing

Table 12

ANNUAL MINIMUM OTHER BENEFITS BY ESTIMATED MARKET RENT, 1968

Estimated Market Rent ($/Room/Mo)	All Projects		City Projects		State Projects	
	Total (In $ million)	Per Unit (In $)	Total (In $ million)	Per Unit (In $)	Total (In $ million)	Per Unit (In $)
25-34	0.4	31	0.3	31	0.1	29
35-44	2.1	87	1.0	88	1.1	87
45-54	1.4	181	1.1	186	0.3	164
55-64	2.7	282	0.4	234	2.3	293
65 and over	0.7	396	0.6	415	[a]	299
All rents	7.3	129	3.5	114	3.9	147

[a] Less than 100,000.

them. Thus, to justify a program like Mitchell-Lama, appeal must be made to the creation of other benefits. We saw in the last section that the total amount of other benefits necessary to justify the program is $7.3 million annually or $129 per unit. Now, we want to see how this amount is distributed by location.

The total columns in Table 12 reflect primarily the number of units located in each market area; hence, the per-unit figures are more revealing for our purposes. We observe that minimum other benefits per unit increase with more favorable locations. What this means is that resource cost increases faster than gross tenant benefits. Thus, locating projects in better areas is less justified than locating them in poorer ones, unless it can be convincingly argued that nontenant benefits are greater in better areas. That is, to argue that a unit should be built in an over-$65 area rather than in an under-$35 area, one would have to believe that additional benefits of at least $396 per unit per year would flow from the unit in the better location and that additional benefits of less than $31 per year would flow from units located in the less desirable area. Clearly, this is a difficult position to maintain. Moreover, our evidence indicates that Mitchell-Lama projects only upgrade the medium quality neighborhoods.

Therefore, it would appear that the best locations for Mitchell-Lama projects are the mid-rent areas. These are locations that show some evidence of other benefits. Apparently, the best market areas would be poor location choices because they require large nontenant benefits to be justified, and no evidence supports the existence of these other benefits. To be sure, tenant benefits are highest in these areas but, then, so are resource costs. The very poorest quality sites are more difficult to judge. Clearly, these sites generate gross tenant benefits closest to resource cost and therefore require the least in the way of nontenant benefits to justify them; however, whether or not the poorest areas generate other benefits is doubtful.

CITY COST BY LOCATION

We now examine the size of the City's contribution to the Mitchell-Lama program. Table 13 presents the distribution of City cost by market rent class. Note the large total annual City cost of all Mitchell-Lama projects--$23.2 million. This figure represents an annual rate as of July 1968, and incorporates all tax exemption increases effective then or retroactive to that date. On a per-unit basis, this amounts to $408 a year. Sixty percent of the total is due to City and 40 percent to State projects.

The City cost of State projects is some $120 per unit less than that of City projects. This pattern is repeated in the body of the table for projects with market rents under $55. Such differences may be the result of two factors: (1) differences in percentage exemption, i.e., State projects have lower exemption rates; (2) differences in assessed valuation, i.e., State projects have lower assessed valuations. And the differences in assessed valuation may, in turn, be due to one or both of two factors: (a) discriminatory assessment procedures between City and State projects or (b) differential location policy.

Table 13

ANNUAL CITY COST BY ESTIMATED MARKET RENTS, 1968

Estimated Market Rent ($/Room/Mo)	All Projects		City Projects		State Projects	
	Total (In $ million)	Per Unit (In $)	Total (In $ million)	Per Unit (In $)	Total (In $ million)	Per Unit (In $)
25-34	6.2	464	5.0	522	1.2	317
35-44	10.2	419	5.8	502	4.4	343
45-54	2.8	347	2.2	364	0.5	293
55-64	3.3	346	0.6	327	2.7	350
65 and over	0.8	440	0.6	400	0.2	647
All rents	23.2	408	14.2	466	9.0	341

The average exemption in the three lowest rent categories for City projects is about 60 percent; for State projects, the figure is 47 percent. Increased exemptions occurred in April and July of 1968 but only for City projects. This is why the exemption rates differ between City and State projects.

Assessed values per unit for City and State projects were calculated, and absolutely no indication of differential treatment was found. Finally, almost 90 percent of the City units are in the lowest three rent categories compared to only 70 percent of the State units. This is certainly not evidence in favor of higher assessed valuations due to the location of City projects. So it seems safe to conclude that the City-State differences seen in Table 13 are due to the rate of exemption rather than to other factors. These figures indicate what may happen to City costs when State projects receive higher exemptions.

There is one other interesting finding in Table 13. Notice that for City projects the per-unit figures decline steadily as rents increase, except for the last category. This indicates that projects in poorer areas receive more tax exemptions per unit than those in better areas. It has apparently been necessary to do this to keep project rents low in the poorer neighborhoods in order to market the units (see Table 6). Note that this pattern is not repeated for the State projects; however, a similar pattern will probably emerge as State projects are granted larger exemptions.

Table 14 shows ratios of City costs to total nontenant contributions (or tenant subsidy) by rent class. These ratios could be interpreted as the City's share in the total nontenant contribution. The totals indicate that for all projects the City contributes an average of 50 percent of the subsidy. State projects have smaller percentages than City projects because the tenant subsidy is greater on average for State projects (see Table 10) and because City costs are lower for State projects (see Table 13).

The ratios decrease with market rent for all cases except the last State category. Again, recall that this category consists of two projects receiving 100-percent exemptions and with market rents of $65 and $75.

Table 14

CITY COST AS A PERCENTAGE OF ALL NONTENANT CONTRIBUTIONS, BY ESTIMATED MARKET RENT, 1968

Estimated Market Rent ($/Room/mo)	All Projects	City Projects	State Projects
25-34	238	263	169
35-44	75	89	61
45-54	30	31	28
55-64	19	22	19
65 and over	17	15	34
All rents	50	64	36

The extremely large figures in the lowest rent category require some explanation. Conceptually, City cost cannot exceed tenant subsidy unless other nontenant contributions are negative. This implies that project owners make more than a 6-percent return. If this is the case, we cannot prove it for lack of data. There may also be measurement errors, however, that cause the City cost estimate to exceed the tenant subsidy estimate.

First, we may have underestimated the size of nontenant contributions.* Our estimate of tenant subsidy was obtained by subtracting project rent from estimated market rent. There are two possible sources of error here. One is that the estimated market rents are too low; this would make our estimate of tenant subsidy smaller than the true tenant subsidy, thus we could quite conceivably have City cost exceed our estimate of tenant subsidy, assuming City cost is measured correctly. Another possible cause for underestimating the tenant subsidy is due to our assumption that Mitchell-Lama projects are as efficient as similar housing provided by nonsubsidized developers. This assumption is what permits us to use estimated market rent for resource cost. If the true resource cost were in fact greater than our estimate, because Mitchell-Lama projects were less efficient than private non-subsidized housing, then the true tenant subsidy would exceed our estimate. Unfortunately, we have no way of judging which, if either, of these suppositions is correct.

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*If this error exists, it means, of course, that the figures in the higher rent classes are suspect as well as those in the lowest rent class.

Second, we may have overestimated the amount of City cost for projects located in the lowest rent class. We have argued that the property tax exemption granted a Mitchell-Lama project is the correct measure of the City cost of that exemption. Now, the figures in Table 13 may be perfectly good estimates of the amount of property tax exemption but not good estimates of City cost, if these two concepts are not the same thing. It has been argued by others that a Mitchell-Lama project built in a poor market area is unlikely to preempt construction on that site, so that the increase in assessed value resulting from the Mitchell-Lama development is a net gain in the City's tax base. If so, partial or even full exemption of the project from real estate taxes would not reduce tax revenues, and we would have overestimated City cost by an unknown amount.

As explained on pp. 20-22, we reject this argument except under special conditions that do not seem to be met by Mitchell-Lama projects located in poor market areas. But in view of the anomalous results shown for these areas in Table 14, the reader may wish to review our argument.

CONCLUSION

If other things were equal, it seems that the City would prefer to locate projects in areas where its tax loss would be least. This occurs for City projects located in the \$55-\$64 rent class and for State projects located in the \$45-\$54 rent class. Remember that our figures included recent increases in tax exemptions for City projects but not for State projects. It is likely, therefore, that the figures in the two lowest categories for State projects would rise with increased tax exemptions. Thus, it would appear the least-cost location in terms of tax revenue lost would be in areas where projects could command \$45 to \$64 per room per month on the private market.

Interestingly enough, this conclusion does not conflict with the conclusion concerning location that was based solely on total resource cost and gross tenant benefits. That is, it seems that projects should be located in medium-quality neighborhoods, rather than in the worst or the best. If this were done, as indicated by our analysis of currently occupied projects, the excess of resource cost over gross tenant benefits would be least, the likelihood of neighborhood upgrading would be greatest, and City costs would be least. It appears that no case can be made for locating Mitchell-Lama projects in either the poorest areas, in the hope of eliciting the greatest upgrading or causing the least City cost, or in the very best areas, in the interest of creating the most tenant benefits. Rather, considerations of tenant benefits, upgrading effects, resource cost, and City cost lead to the best policy: locating projects in medium-quality areas.

IV. DISTRIBUTION OF BENEFITS BY TENANT CHARACTERISTICS

To discover whether or not the Mitchell-Lama program is meeting the needs of its target population, we must examine the distribution of tenant benefits by income and family size. We also examine the distribution of tenant benefits by age and sex of household head.

We present a series of tables showing the percentage distribution of Mitchell-Lama households and net tenant benefits by various household characteristics. For income and family size, we present one-way tabulations and cross-tabulations of the percentage distribution of households and net tenant benefits. These tabulations help define the types of families the program serves and the benefits they receive. We use net tenant benefits as the quantity that indicates tenant benefits most clearly.

The tabulations must be interpreted with care because they are based on sample data from 4231 households, whereas all previous findings, except for neighborhood upgrading, were for all City and State projects.* Our sample units are all from projects having occupancy dates from 1966 to 1968, whereas the majority of all projects are older, and certain program characteristics may be correlated with project age. For example, construction costs have risen over the years, which is apparently correlated with a tendency to build Mitchell-Lama projects with smaller apartments on average than those in earlier projects. This naturally affects the size of households residing in Mitchell-Lama projects. There may, of course, be other differences between older and newer projects. Thus, our conclusions may not apply to all projects but only to the more recent ones.

NET TENANT BENEFITS BY INCOME

With these provisos in mind, we present our findings. Table 15 displays the distribution of Mitchell-Lama households and net tenant benefits by income. The distribution of net tenant benefits by income

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*See Appendix D for a description of sample data on 4231 households and dwelling units.

Table 15

DISTRIBUTION OF HOUSEHOLDS AND NET TENANT BENEFITS BY TENANT INCOME, 1968

Annual Income	Percentage of Households	Percentage of Net Tenant Benefits
Under $2,000	1.6	1.4
$2,000-2,999	1.7	1.8
3,000-3,999	2.0	1.8
4,000-4,999	2.7	1.5
5,000-5,999	5.7	3.7
6,000-6,999	10.9	6.6
7,000-7,999	12.2	10.4
8,000-8,999	13.5	12.3
9,000-9,999	13.9	13.5
10,000-10,999	12.3	13.1
11,000-11,999	9.5	10.9
12,000-12,999	6.1	7.6
13,000-13,999	3.5	5.8
14,000-14,999	2.2	3.6
15,000 and over	2.1	6.0
All incomes	100.0	100.0

corresponds roughly to the distribution of households by income. Households with incomes under $10,000, however, seem to receive proportionately fewer benefits than those with incomes of $10,000 or more. Moreover, although this is not explicitly shown, the benefits per unit rise with income beyond $3000, meaning that families with higher incomes receive on average higher benefits than those with lower incomes.

If "middle-income" is defined as the middle of the income distribution (excluding lowest and highest 25 percent), then in 1968 New York City households having incomes from $4000 to $10,000 fall into this category.*

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*Based on the distribution of 1967 incomes for all renter households in New York City as reported by the 1968 Housing and Vacancy Survey, with adjustments by New York City Rand Institute. The income range encompassing 50 percent of all renter households is $3570 to $9390 in 1967 dollars. Adjusting by the CPI for the NYC SMSA yields a range of $3765 to $9903 in 1968 dollars, which we have rounded to $4000 and $10,000 respectively.

Barbara Woodfill uses a more elaborate method of defining income

Although middle-income families are not the only ones the program serves, the question remains whether middle-income families receive proportionately more benefits than other Mitchell-Lama households. Table 15 shows that families with incomes between $4000 and $10,000 receive only 48 percent of the net tenant benefits, whereas they comprise 59 percent of the households. Families with incomes less than $4000 receive 5 percent of all net tenant benefits although comprising slightly over 5 percent of the households. Finally, households with incomes of $10,000 or more receive 47 percent of the benefits and occupy about 36 percent of the units.

For our sample units, then, it is obvious that the Mitchell-Lama program can more accurately be described as a middle- and upper-income housing program rather than as a middle-income housing program.

NET TENANT BENEFITS BY FAMILY SIZE

We now consider the distribution of net tenant benefits by family size, as shown in Table 16. In our sample nearly 60 percent were one- or two-person families, and over 80 percent were families of three or less. The "typical" four-person family comprises only 13 percent of the total, and only about 5 percent consists of families with more than four members.

The distribution of net tenant benefits conforms fairly well to the distribution of units by family size, with one important exception. The one-person households comprise some 21 percent of all units but receive only 9 percent of the net tenant benefits. To a lesser extent,

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groups, both for Mitchell-Lama tenants and the City as a whole. She estimates the dollar incomes needed by families of different sizes to sustain the same level of living, and converts the incomes of larger and smaller families to a level-of-living equivalent for a family of four persons. She calls this concept "reference income." For renter households in 1968, the interquartile range of the reference income distribution is from $4600 to $12,000. See Barbara M. Woodfill, *New York City's Mitchell-Lama Program: Middle-Income Housing?*, R-786-NYC, New York City Rand Institute, June 1971, Sec. I.

Although the same method could have been applied here, we have chosen instead to show a cross-tabulation of income by family size.

Table 16

DISTRIBUTION OF HOUSEHOLDS AND NET TENANT BENEFITS BY FAMILY SIZE, 1968

Family Size	Percentage of Households	Percentage of Net Tenant Benefits
1	21.2	9.1
2	37.3	36.7
3	23.9	27.3
4	13.0	19.3
5	3.3	5.4
6	1.2	1.9
7	0.1	0.3
8 or more	a	a
Total	100.0	100.0

[a] Less than 0.1 percent

two-person households also receive proportionately smaller benefits. The three-person and larger households receive proportionately greater benefits than their proportions of total units.

The real income increase ranges from 4.1 percent for one-person households to 5.4 percent for those of eight or more. This is about a 30-percent difference in the real income increment for small and large households. As a percentage of project rent, the net tenant benefit ranges from about 13 percent for one-person families to 37 percent for households with eight or more persons.*

It would appear that the program presents a curious paradox with respect to household size; it provides most of its units to small families, but provides larger benefits, both absolutely and relative to income and project rent, to large and medium-sized families. Clearly, the medium and large families that succeed in getting into a Mitchell-Lama project do pretty well, but apparently only a few get in.

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*Notice that net tenant benefits as a percentage of income and of project rent are lower for the sample units than they are for the average of all projects (see Sec. II).

NET TENANT BENEFITS BY INCOME AND FAMILY SIZE COMBINED

Table 17 shows the distribution of households and net tenant benefits by income *and* family size. Since the Mitchell-Lama program's target population is middle-income families with children, we are most interested in the entries relating to households with incomes between $4000 and $10,000 and with three or more members. Notice that only 17 percent of the families in our sample are members of the target group and that they receive only 18 percent of all net tenant benefits. This presents a striking contrast to Table 15, which tabulated households and benefits by income alone. It is easy to see now that most of the middle-income families served by the program are small, with only one or two members. These families comprise nearly 42 percent of all households in our sample and receive 30 percent of the net tenant benefits. Thus, to the extent that the Mitchell-Lama program aids middle-income families, it aids smaller families.

Table 17

DISTRIBUTION OF HOUSEHOLDS AND NET TENANT BENEFITS
BY TENANT INCOME AND FAMILY SIZE, 1968

	Family Size			
	Two and Under		Three and Over	
Income	Percentage of Households	Percentage of Benefits	Percentage of Households	Percentage of Benefits
Under $4000	5.2	5.0	0.1	a
$4000-9,999	41.8	30.0	17.2	18.0
10,000 and over	11.5	10.8	24.2	36.1

[a] Less than 0.1

A similar situation is observed for low-income families. The program excludes larger low-income families (there are only six such families in our sample) although providing some 5 percent of its units and tenant benefits to small low-income families.

Just the reverse occurs with upper-income families. Some 24 percent of Mitchell-Lama units are occupied by large upper-income families, who receive 36 percent of all net tenant benefits. Only 11.5 percent are occupied by small upper-income families, who receive only 11 percent of the benefits.

Thus, the program presents an unsatisfactory performance with respect to its target population. Instead of supplying its units and benefits to middle-income families with three or more members, it supplies the bulk of its units and benefits to small families and to large upper-income families.

Income and family size are probably the most important characteristics of families residing in Mitchell-Lama units. Nevertheless, age and sex of household head are also of some interest, age more so because of the program's subgoal of helping the elderly. Race is also an interesting characteristic but, unfortunately, the Mitchell-Lama records provide no information on ethnicity.

NET TENANT BENEFITS BY AGE OF HOUSEHOLD HEAD

Table 18 presents the distribution of net tenant benefits by age of household head. Nearly three-quarters of our sample households are headed by a person under 55, and nearly 40 percent are headed by persons aged 35 to 54. Only slightly over one-fourth of the units are headed by a person 55 or over.

Table 18

DISTRIBUTION OF HOUSEHOLDS AND NET TENANT BENEFITS BY AGE OF HEAD OF HOUSEHOLD, 1968

Age of Head of Household	Percentage of Households	Percentage of Net Tenant Benefits
Under 25	10.5	6.6
25-34	23.5	20.7
35-44	20.0	19.5
45-54	19.6	22.7
55-64	14.8	16.5
65-74	9.9	12.2
75 and over	1.7	1.8
Total	100.0	100.0

Interestingly, the distribution of net tenant benefits corresponds fairly well to the distribution of households for ages 25 to 65. There is disparity at the extremes: households headed by a person under 25 constitute 10.5 percent of the units but receive only 6.6 percent of the net benefits, and those headed by a person 65 and over occupy 11.6 percent of the units but receive 14 percent of the benefits. Moreover, the absolute size of the net tenant benefits is larger on average for households headed by an older person than for those headed by someone younger.

NET TENANT BENEFITS BY SEX OF HOUSEHOLD HEAD

The final household characteristic for which tenant benefits are examined is the sex of household head. Table 19 displays the distribution of net tenant benefits and households by this characteristic. Although 75 percent of the sample households are headed by a male, such households receive some 82 percent of net tenant benefits.

Table 19

DISTRIBUTION OF HOUSEHOLDS AND NET TENANT BENEFITS
BY SEX OF HOUSEHOLD HEAD, 1968

Sex of Household Head	Percentage of Households	Percentage of Net Tenant Benefits
Male	75	82
Female	25	18
Total	100	100

SUMMARY AND CONCLUSIONS

To the extent that our sample characterizes the most recent Mitchell-Lama projects, the program has allocated units and distributed tenant benefits in a way that seriously brings into question whether the program is adequately serving its intended beneficiaries. If the goal is to provide adequate housing at reasonable prices to middle-income households with children, then one would expect to find Mitchell-Lama units occupied by families of more than two persons with incomes between $4000 and $10,000. Instead, we find 82.8 percent of the units occupied and 82 percent of benefits received by households who do not satisfy these criteria. Moreover, we find that net tenant benefits increase with income, whereas one would expect the reverse. However, this perverse behavior is offset to some extent by the increase in benefits with family size. Nevertheless, middle-income families with children are not the only group, in fact not the predominant group, served by the Mitchell-Lama program nor do they receive a preponderance of net tenant benefits.

If the City still wishes the Mitchell-Lama program to serve middle-income families with children, then it would seem the program has somehow gotten out of step with this desire. If the earlier projects, in fact, serve the target population, then the recent projects represent a trend away from serving this population. The result surely does not represent a conscious desire on HDA's part to exclude middle-income families with children and replace them with smaller, higher- and middle-income families. Rather, the result is probably due to rising construction costs coupled with the desire to produce the most units for the money. This has resulted in smaller units and higher project rents, hence smaller families with larger incomes to occupy the smaller units, with mainly upper-income families occupying the larger units.

It would seem that the solution lies in producing fewer, larger units and in stringently applying tenant selection policies designed to exclude higher-income families from occupancy.

V. CONCLUDING REMARKS AND POLICY RECOMMENDATIONS

Some policy recommendations would narrow the difference between gross tenant benefits and resource costs or would increase the magnitude of other, nontenant benefits -- without involving value judgments concerning the relative "importance" of different classes of people. In another category are recommendations that explicitly address the goal of helping particular classes of people more than (or to the exclusion of) others. In this category, but somewhat more encompassing, are recommendations that attempt to reduce the City contribution relative to the contributions of others, while maintaining a given level of benefits per dollar of resource costs.

Location policy falls in the first class of recommendations. It seems clear that, where possible, Mitchell-Lama projects should be located in medium-quality market areas, where average monthly market rents per room are between $35 and $65. Units located in the lowest rent areas simply do not produce enough benefits; these units produce 5.5 percent of all net tenant benefits but comprise 23 percent of all units. Benefits per unit were also lowest for this category, $164 compared to an average of $695. The only offsetting argument is that the amount of other benefits required to equate benefits and cost was lowest for units located in the poorest market areas. At the other extreme, units in the highest rent class, $65 or over per room, receive about 9 percent of the total net benefits although comprising only 3 percent of the units. The net tenant benefits average an extremely large $2134 per unit per year. However, minimum other benefits were quite large also: $396 per unit per year. This reflects the large resource cost associated with location in good market areas. All in all, the data seem to indicate that the three middle-rent categories strike a better balance in terms of absolute and relative sizes of tenant benefits and costs than do the lowest and highest categories. Furthermore, what neighborhood effects can be attributed to Mitchell-Lama projects appear to be concentrated in the middle-rent areas. Finally, City costs appear to be much higher for projects located in the poorest market areas because higher tax exemptions are needed to keep rents low enough to market these units. So, it would seem there are compelling reasons for a redirection of HDA location policy for Mitchell-Lama projects.

While the recommendation to locate Mitchell-Lama projects in medium-quality market areas only requires agreement that more benefits are better than less, most other recommendations based on the analysis appear to involve stronger value judgments.

A wide range of families reside in Mitchell-Lama units, if our sample units are any indication. They have incomes from $1000 to $24,000; they have family sizes up to eight or more; they are headed by both males and females ranging in age from under 25 to over 75. As shown in Secs. II, III, and IV, the Mitchell-Lama program serves some families better than others while serving them all pretty well.

Now, from a policymaker's viewpoint, there are two overriding concerns. The first involves the number of target families served by the program relative to the whole target population. The second involves the mix of families residing in Mitchell-Lama projects: the number of target families relative to the number of others occupying Mitchell-Lama units and the size of benefits received by target families relative to that received by others living in Mitchell-Lama projects.

One can seldom be sure exactly what objectives a program's legislative sponsors had in mind. As noted in our introduction, the Mitchell-Lama enabling legislation speaks of the program as a means of providing housing for "low-income families and aged persons." Statements by those close to the program in New York City treat it as a source of "middle-income" housing, and convey the impression that the principal public purpose served by the program is to provide housing within the City for middle-income families with children, households which would otherwise move to the suburbs. However, certain of the projects have been quite clearly intended to house medical personnel for adjacent hospitals.

We have assumed that the main purpose of the program was to serve middle-income families with children. If this assumption is wrong, perhaps program objectives should be clarified. If this assumption is correct, we can measure program performance against program purpose. If "middle-income" is defined as the middle of the income distribution (excluding lowest and highest 25 percent), then in 1968, 1,042,000 renter households, whose incomes are between $4,000 and $10,000, fall into this category. Renter households with three or more members total 839,000. Finally, 504,000 have both characteristics.* Now, even if the Mitchell-Lama program supplied all 57,000 units to middle-income families with children, it would still fall short of serving its entire intended clientele.

This issue is primarily a question of program size, assuming it satisfactorily serves members of the target population. The size of the program, however, is largely determined by legal encumbrances on the amount the City may borrow and, hence, lend. Our analysis sheds no light on how the City might enlarge the program.

As we saw above, the 57,000 units are apparently not allocated solely to middle-income families with children, nor even to middle-income families of whatever size, nor even to low-income and middle-income families. Rather, some 36 percent of our sample units are occupied by upper-income families, who receive 47 percent of all net tenant benefits. Only 59 percent of the units are occupied by middle-income families, who receive only 48 percent of net tenant benefits, and only 17 percent are occupied by middle-income families consisting of three or more persons.

From our sample it is clear that the most recent projects, at least, are not serving the intended clientele as well as they might. A reorientation of the program would seem in order. Although we cannot tell the City how to obtain funds for more projects, it would seem that if the program were reoriented the City could better use the projects it already has and the ones that are yet to be built. This is effectively the same as increasing the size of the program.

Reorientation involves four recommendations: (1) Revise the formula that governs admission income limits, lowering them and making them more sensitive to family size; (2) provide a higher proportion of two- and three-bedroom units in new projects to house more families with children; (3) relax the space-occupancy standards to make available more units for larger families in existing projects; (4) exercise more control over eligibility of families after their admission to the program.

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*Based on 1968 Housing and Vacancy Survey.

These recommendations coupled with the location policy discussed earlier would seem to go a long way toward increasing tenant and non-tenant benefits relative to resource costs and to City costs and toward reorienting the program better to serve its intended beneficiaries.

Appendix A

TENANT BENEFITS

The analysis presented here is in terms of the individual household and dwelling. However, in application, the individual benefits and costs are added to obtain program aggregates. Friedman has warned us against the improper generalization of relationships from the individual level to the aggregate.* A general equilibrium methodology for evaluating housing programs would probably avoid this problem; however, this approach was too difficult to implement here.**

In an attempt to mitigate the possible difficulties of our methodology, we assume that full competitive equilibrium prevails in all markets and that construction of Mitchell-Lama projects has no effect on relative marginal costs of housing and nonhousing goods. Moreover, in order to aggregate across all consumers (or within some defining category), we must also assume that the distribution of income within the aggregate is acceptable.

We know, however, that New York City, in which the City Mitchell-Lama program operates, has about two-thirds of its rental housing units under rent control.*** While this does not automatically preclude the accuracy of the full-competitive assumption (because landlords of rent controlled buildings may have allowed their buildings to decline in quality to the point where they earn competitive returns), it does provide a prima facie case against the assumption. Rent control has probably resulted in less housing than would have prevailed without it and an excess demand for housing. These are the typical results of a price ceiling, which is essentially what New York City's rent control is.

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*For a demonstration of this point in the context of taxation, see M. Friedman, "The 'Welfare' Effects of an Income Tax and an Excise Tax," in *Essays in Positive Economics,* The University of Chicago Press, Chicago, 1953.

**It is only recently, for instance, that tax incidence has been viewed in a general equilibrium context. See P. M. Mieszkowski, "On the Theory of Tax Incidence," *Journal of Political Economy,* Vol. 75, No. 3, June 1967, pp. 250-262, and the works cited therein. As far as we know, no similar analysis has yet been performed for public expenditures.

***Based on cross-tabulations from 1968 Housing and Vacancy Survey.

Under these circumstances, the Mitchell-Lama program may have resulted in a net increase in housing. If this has occurred, then the program has produced benefits we are unable to measure.

The assumption that there is no effect on relative marginal costs of Mitchell-Lama construction is closely related, for, if construction of Mitchell-Lama projects lowered the cost of housing relative to other goods, we would expect an increase in housing to occur. As indicated earlier, however, evidence suggests that housing is a constant cost industry. The final assumption concerning aggregation within defining categories is unavoidable if such aggregation is performed, and no better justification can be given for it.

We turn now to developing the concepts necessary for housing program evaluation, starting with tenant benefits. How might one assess these benefits? One way is to find the dollar amount that will make the consumer as well off without the program as with it. There are several ways to do this, all classed under the rubric "consumer's surplus."* As used here, this term means the additional money that the consumer would need to make him as well off without the program as with it, given that he must pay market prices for the goods he buys and market rental for his housing.

Referring to Fig. 1, assume that a non-participant in a housing program has a given income and faces market prices of all goods and housing. The solid line in Fig. 1 represents the level of this person's income and the relative prices of all goods and housing. The individual would achieve the most satisfaction, under these circumstances, by consuming quantities of the composite nonhousing good x and the housing good h indicated by point a on the indifference curve u_0.

Now, assume that the individual participates in a housing program and that the quantities of housing and all other goods enjoyed under the program are indicated by point c on the indifference curve u_1.** Of

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*A good discussion of consumer's surplus may be found in E. J. Mishan, "A Survey of Welfare Economics, 1939-1959," *The Economic Journal*, Vol. 70, No. 278, June 1960, pp. 197-265.

**We have drawn the diagram so that the tenant consumes more housing under the program than he would without it. We believe this to be the likely outcome of most housing programs. Evidence would require us to compare the market rental of the program unit with the tenant's alternative private market unit. We did this for our 4231 sample units and found an average increase in housing consumption of 17 percent due to the program.

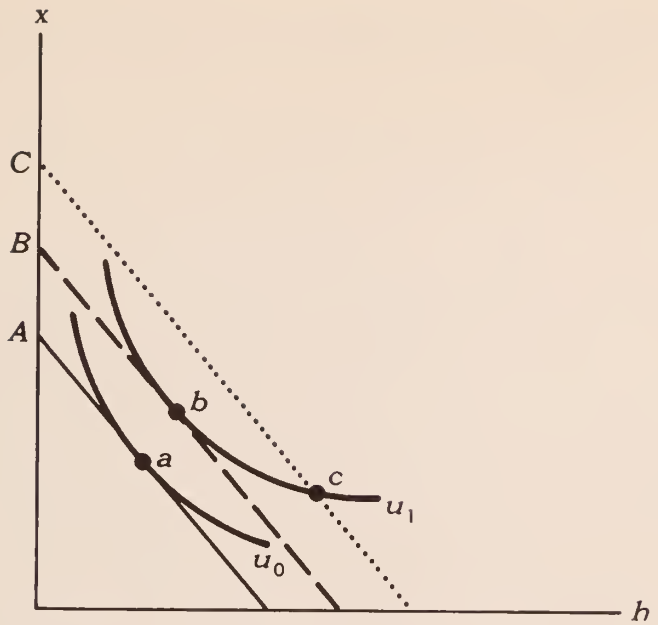

Figure 1

course, he now pays less than market rent for his dwelling unit and enjoys a higher level of satisfaction under the program than he would without it. If he were to obtain the same level of utility as u_1 but be required to pay market rental for his housing, he would need an income represented by the dashed line, which is tangent to the u_1 indifference curve at point b. This line is drawn parallel to the initial budget constraint, indicated by the solid line, to show that the prices of x and h are the same in both situations. If the income associated with point a is represented by y and the individual's actual income by y_0, then the net tenant benefits of the program are

$$(1) \qquad B_t^n = y - y_0 .$$

This is the amount of money which, if added to his income, would allow the consumer to attain a level of satisfaction u_1 equal to that attained under the housing program. This amount can be represented in terms of the nonhousing good by the distance AB in Figure 1.* Gross tenant benefits are the sum of net tenant benefits and the tenant's project rent, i.e.,

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*Some readers will recognize this consumer's surplus measure as the "price equivalent variation." There are at least four other consumer's surplus measures that could have been used. These may be classified as the Hicksian measures (which are in terms of indifference curves) and the Marshallian measure (which is in terms of the demand

$$B_t^g = B_t^n + R_p, \qquad (2)$$

where R_p is project rent and B_t^g represents gross tenant benefits.

It may be noted that B_t^n cannot be computed from observable data since the income necessary to achieve u_1 is not directly observable. So, in the general case presented above, net tenant benefits cannot be measured. One way of estimating tenant benefits is to estimate the tenant subsidy instead. This has been done before in evaluating housing programs,* but usually it was not observed, perhaps because it was not realized that the tenant subsidy and the net tenant benefits were not the same thing.** In fact, it can be shown that the subsidy will typically be larger than the benefit.

In Fig. 1, the tenant subsidy is AC in terms of the composite good x, whereas the net tenant benefit is AB. The difference, BC, is what we have called minimum other benefits. Notice that the tenant subsidy and the net tenant benefits are equal only if the housing program permits the participant to be at b. Then, the housing program is exactly like an unrestricted cash grant of AB. In this case, since net tenant benefits equal the tenant subsidy, then gross tenant benefits would equal resource cost, and no other benefits would be required to justify the program. This, of course, assumes the program efficiently provides housing.

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curve). In principle, the Hicksian measures are preferred to the Marshallian in that the former do not require the assumption of a constant marginal utility of income. These measures do differ among themselves and from the Marshallian measure; in particular, the price equivalent variation tends toward the high end of the spectrum.

*See, for example, R. L. Bish, "Public Housing: The Magnitude and Distribution of Direct Benefits and Effects of Housing Consumption," *Journal of Regional Science*, Vol. 9, No. 3, December 1969, pp. 425-438.

**Others have recognized the distinction. See, for example, J. R. Prescott, "Rental Formulation in Federally Supported Public Housing," *Land Economics*, Vol. 43, No. 3, August 1967, pp. 341-345.

If one knew that the tenant subsidy was a close approximation to net tenant benefits, one could use the former to estimate the latter. Usually it is not known whether these two measures will be close, and treating them as if they are begs the question. Moreover, comparing tenant benefits and the tenant subsidy helps evaluate the program by indicating the magnitude of other benefits required to justify the program. Treating them as if they were equal would imply that gross tenant benefits exactly equalled resource cost.

For these reasons, it is desirable to have a measure of net tenant benefits such as that developed above: the amount of additional income the tenant would need to be as well off without the program as with it. As noted, however, this measure is unobservable and must, therefore, be estimated. To estimate net tenant benefits and, consequently, gross tenant benefits, assume that an individual's utility function is given by

$$u = h^{\beta}x^{1-\beta}, \tag{3}$$

and that his budget constraint is

$$y = p_x x + \alpha p_h h, \tag{4}$$

where h and x represent housing and nonhousing, respectively, and p_x and p_h are their market prices. The assumed utility function implies that the consumer will spend 100β percent of his income on housing and the remaining amount on all other goods (all other goods being represented here by the composite commodity). The parameter β is the household's rent-income ratio. The parameter α represents that proportion of market rental that the program participant must pay for his subsidized dwelling unit, $0 \le \alpha \le 1$. Therefore, the following demand relations emerge from maximizing the utility function subject to the budget constraint:

$$h = \frac{\beta y}{\alpha p_h}, \tag{5}$$

$$x = \frac{(1-\beta)y}{p_x}. \tag{6}$$

Now suppose the consumer participates in a housing program (i.e.,

$\alpha < 1$) and obtains h_1 units of housing and x_1 units of other goods with an income of y_0. Now, the utility level associated with these amounts is, of course,

$$u_1 = h_1^{\beta} x_1^{1-\beta} \quad . \tag{7}$$

How much income is necessary for the consumer to obtain u_1 when required to pay market rental? This is found by substituting the demand equations (with $\alpha = 1$) into the utility function, setting $u = u_1$, and solving for y. The resulting expression is

$$y = \left[\frac{y_0 - p_x x_1}{\alpha\beta}\right]^{\beta} \left[\frac{y_0 - \alpha p_h h_1}{1-\beta}\right]^{1-\beta} . \tag{8}$$

This may be simplified to make the expression more amenable to estimation. Note the following:

$$\alpha = R_p / R_m , \tag{9}$$

where R_m is market rent,

$$y_0 - p_x x_1 = R_p , \tag{10}$$

$$\alpha p_h h_1 = R_p , \tag{11}$$

$$y = \left(\frac{R_m}{\beta}\right)^{\beta} \left(\frac{y_0 - R_p}{1 - \beta}\right)^{1-\beta} . \tag{12}$$

It can also be shown that this expression is invariant to any positive monotonic transformation of the utility function.* Then, net tenant benefits are $B_t^n = y - y_0$, where y is given by (12). Gross tenant benefits are, of course, $B_t^g = B_t^n + R_p$.

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*Equation (12) can also be obtained from the first-order conditions for the minimization of income subject to the utility level obtained under the program; i.e., from the minimization of $p_h h + p_x x$ subject to $h^{\beta} x^{1-\beta} = h_1^{\beta} x_1^{1-\beta}$. The author is indebted to E. O. Olsen for this point.

The assumed utility function implies certain things about consumer behavior. Specifically, it implies unitary price and income elasticities for housing and nonhousing. That is, for a given income, expenditures on housing and all other goods remain unchanged as prices change. Also, for given prices, expenditures on both goods increase and decrease in proportion to increases and decreases in income. These implications are due to our assumption that the rent-income ratio, β, is a constant. It is really the restrictions on housing demand and expenditures that are important here, for the nonhousing good is meant to represent all nonhousing consumption. Thus, if it were true that the demand for housing had unitary price and income elasticities, then it would necessarily be true that the same conditions held for the composite nonhousing good. Thus, evidence in favor of unitary price and income elasticities for housing would be evidence in favor of the particular utility function used above (or any other utility function that had the same implications).

There are empirical housing demand studies and empirical household expenditure studies that may be used to get evidence on this issue. The results of these studies differ depending, for example, on the data used, the estimation technique, the income definition, and so on. However, several of these studies have produced findings consistent with the assumed utility function, i.e., unitary price and income elasticities.* Others have not.** However, on balance, the evidence favors unitary price and income elasticities.***

The assumed utility function recommends itself for two reasons. It is consistent with some empirical evidence on the demand for housing and family housing expenditures, and it is simple enough to permit the kind of manipulation necessary to obtain a measure of tenant benefits.

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[*] See, for example, Muth.

[**] See, for example, T. H. Lee, "Housing and Permanent Income: Tests Based on a Three-Year Reinterview Survey," *Review of Economics and Statistics*, Vol. 50, No. 4, November 1968, pp. 480-490.

[***] See F. deLeeuw, *The Demand for Housing: A Review of Cross-Section Evidence*, Working Paper 112-14, The Urban Institute, March 20, 1970.

Appendix B

ESTIMATING THE RENT-INCOME RATIO

A function was estimated relating the rent-income ratio to income, family size, age and sex of household head. The following relationship was used for predicting rent-income ratios:

$$(13)\quad \beta = 0.07546 + \underset{(0.03416)}{1.06675(1/I)} + \underset{(0.00043)}{0.00073(A/I)} - \underset{(0.00596)}{0.00774\,(N/I)} + \underset{(0.00388)}{0.01890S},$$

where β = ratio of annual shelter rent to annual income

I = income, in thousands of dollars per year

A = age of household head, in years

N = number of persons residing in household

S = sex of household head; 1, if female, 0 if male.

This linear regression equation was obtained by applying the method of least-squares to 3873 sample units from the 1968 New York City Housing and Vacancy Survey.* Since the equation is to be used to predict the rent-income ratios that Mitchell-Lama families would have if they were not participating in the program, it is clear that the sample should consist of families residing in non-rent-controlled, nonsubsidized housing. An income range of $1000 to $24,000 is used corresponding to income of Mitchell-Lama families analyzed.

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*A detailed discussion of the 1968 NYC Housing and Vacancy Survey--including sample design, estimation procedure, reinterview procedure, and reliability of the estimates--may be found in the U.S. Department of Commerce, Bureau of the Census, *1968 New York City Housing and Vacancy Survey Sample Design and Estimation Procedure*, December 23, 1968.

In the survey, the U.S. Bureau of Census obtained data on 37,000 housing units. We used only 10 percent of this information for three reasons: (1) only 10,000 units were privately owned and renter-occupied; (2) in many cases the variables necessary for the regression were not reported and/or not recorded; and (3) we used a restricted set of incomes, which allowed us to use only a portion of the survey data.

In addition, this form embodies an adjustment for heteroscedasticity.* In the estimated form of the equation, S is not divided by I. This implies that a female head of household will spend a constant percentage of that spent by a male head. The alternative formulation, that a constant dollar difference would prevail between male and female heads of households, was found to yield less satisfactory results.

Using two-tailed "t" tests of the significance of individual variables, it was found that (1/I) and S differ significantly from zero at better than the 1-percent level of significance; (A/I) is significant at about 9 percent; and (N/I), at 19 percent. Of more importance for prediction, the regression equation was found to be highly significant with an F value of 2342, whereas only 3.32 or better is required for significance at the 1-percent level. This means that the estimated relation yields a better prediction of the rent-income ratio than the sample mean rent-income ratio. The coefficient of determination is 0.71, which means that the regression equation "explains" 71 percent of the variation in the rent-income ratio about its mean. More information on prediction is available from the standard error of estimate, which is 0.09. This means that there is about a two-thirds chance that the predicted rent-income ratio will come within ± 0.09 of the true rent-income ratio.** The mean rent-income ratio in the sample is 0.24.

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*For a discussion of heteroscedasticity and an illustration of the adjustment above, see A. S. Goldberger, *Econometric Theory*, John Wiley and Sons, Inc., New York, 1964, pp. 235-236.

**Due to the large sample size, this standard error of estimate is virtually identical to that of predicting (or forecasting) the rent-income ratio for a particular individual. However, it is much larger than the standard error of predicting the mean rent-income ratio of people with the same set of characteristics; in fact, the standard error is approximately $.09/\sqrt{3873} = .00145$. See, for example, J. Johnston, *Econometric Methods*, McGraw-Hill Book Co, Inc., New York, 1963, pp. 34-39 and pp. 131-133.

Appendix C

DATA ON CITY AND STATE MITCHELL-LAMA PROJECTS

Basic data on City Mitchell-Lama projects--name, number, borough location, street address, number of units--were obtained from an HDA publication.[*] Project rent (or carrying charge[**]) data were not published and were obtained directly from HDA personnel. For each project, we have the average project rent per room. And knowing the number of rooms and units permits us to calculate the average project rent per unit.

Basic data for State Mitchell-Lama projects were obtained from a New York State publication,[***] which also contains the average project rent per room for each State project.

Market rent estimates of Mitchell-Lama units were obtained from Dr. Frank Kristof and Mr. David Talmas.[****] We presented them with a list of project names and locations; they provided their best estimates of what the units would rent for if offered on the private housing market. These market rent estimates are per-room averages by projects as are the project rent figures.

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[*] Housing and Development Administration, Department of Development, *Housing and Facilities Production: Summary (Mitchell-Lama)*, June 30, 1968.

[**] Mitchell-Lama projects may be either rental or cooperative. If cooperative, the resident makes a small down payment and his monthly payment thereafter is called a carrying charge. Carrying charges average about 10 percent less than rental payments. However, no distinction between these two types of occupancy is made in the analysis. This probably causes an underestimate of the benefits received by cooperators.

[***] State of New York, Executive Department, Division of Housing and Community Renewal, *Statistical Summary of Programs*, June 30, 1968.

[****] Kristof is currently Housing Program Officer of the New York State Development Corporation and was formerly Assistant Administrator for Programs and Policy for HDA. Talmas is Chief of the Development Program Research Section, HDA.

We have basic project data, therefore, including market rent estimates, on all 77 City and 46 State Mitchell-Lama projects in occupancy as of June 1968. These data, shown in Table 20, are used in obtaining estimates of resource cost and tenant subsidy.

Tables 21 and 22 show the distribution of projects and units by market rent categories and by borough. City and State projects are also tabulated separately. In Table 21 the Kristof-Talmas market rents are used to determine a project's market rent class. As discussed in the text, since Mitchell-Lama projects do not vary much in quality among themselves, their estimated market rent reflects the quality of their neighborhood location.

Table 20

DATA ON CITY AND STATE MITCHELL-LAMA PROJECTS
(June 1968)

Borough, Project Name and Number	Number of Rooms	Number of Units	Monthly Rent/Room Project ($)	Monthly Rent/Room Estimated Market ($)	Date of Occupancy
A. City Projects					
Bronx					
1. Adee Towers (821)	1,451.5	293	27	45	1962
2. Adelphi House (146)	718.5	150	30	40	1964
3. Allerville Arms (025)	1,036.0	212	30	45	1966
4. Boulevard Towers (132)	1,385.0	329	32	40	1967
5. Bronxwood Tower (932)	588.0	108	26	45	1964
6. Bruckner Tower (239)	1,019.5	209	31	35	1967
7. Candia House (148)	511.0	102	32	40	1967
8. Cannon Heights (020)	864.5	170	31	55	1965
9. Carol Gardens (136)	1,593.5	314	32	35	1967
10. Chatterton Terrace (845)	648.0	132	27	40	1964
11. Cloverleaf Towers (118)	1,024.5	238	34	40	1967
12. Corlear Gardens (262)	585.0	117	29	55	1967
13. Delos House (215)	582.5	124	33	45	1967
14. Dennis Lane (614)	582.5	280	24	30	1959
15. Evergreen Gardens (050)	2,077.0	355	31	35	1962
16. Fordham Towers (320)	722.5	168	31	30	1967
17. Hugh Grant (230)	618.5	139	29	45	1968
18. Hutchinson (617)	819.0	156	26	45	1961
19. Kingsbridge Gardens (049)	903.0	190	35	55	1963
20. Kingsbridge Terrace (112)	519.0	105	31	55	1965
21. Leland House (113)	2,176.5	455	30	35	1964
22. Lind-Ric Apartments (927)	855.0	171	24	45	1963
23. Lindville (241)	706.5	142	26	45	1966
24. Montefiore (017)	461.5	161	24	45	1965
25. Nathan Hale Gardens (058)	1,780.0	400	31	55	1963
26. Noble Mansion (709)	1,198.0	236	28	45	1966
27. Robert Fulton (277)	1,325.5	320	31	30	1967
28. Rosedale Gardens (3HA)	1,888.0	408	24	35	1961
29. Schuyler House (101)	780.5	157	34	40	1964
30. Scott Towers (142A)	1,811.5	351	27	65	1967
31. Tibbet Towers (616)	1,078.0	224	26	55	1961
32. Tilden Towers (264)	592.5	125	27	40	1967
33. Woodstock Terrace (5HA)	1,604.0	319	25	30	1962
Brooklyn					
1. Atlantic Plaza (207)	3,202.0	718	30	35	1967
2. Cadman Plaza (276)	1,225.0	250	29	75	1967
3. Contello Towers I (739)	1,632.0	320	24	45	1960
4. Contello Towers II (842)	1,638.0	321	24	45	1962
5. Contello Towers III (128)	816.0	160	29	45	1967
6. Harway Terrace (838)	1,836.0	360	26	45	1963
7. Highlawn Terrace (613)	560.5	124	27	45	1960
8. Kings Bay I (602)	2,404.0	540	25	45	1959
9. Kings Bay II (602A)	1,807.5	360	25	45	1962
10. Lindsay Park I (114)	11,714.5	768	23	30	1964
11. Lindsay Park II (114)		1,152	23	30	1965
12. Lindsay Park III (114)		769	23	30	1967
13. Luna Park (1HA)	7,338.0	1,576	23	35	1961
14. Pratt Towers (055C)	1,557.5	326	25	35	1964
15. Prospect Towers (253)	753.5	152	29	45	1967
16. Ryerson Towers (055B)	1,546.0	326	25	35	1963
17. St. James Tower (055A)	1,546.0	326	25	35	1963
18. Sam Burt Houses (062)	638.0	144	27	30	1966
Manhattan					
1. Clayton Apartments (002)	750.0	160	27	30	1963
2. Columbus Towers (16WS)	836.5	161	27	50	1967
3. Esplanade Gardens (037)	9,338.0	1,868	27	30	1967
4. Franklin Plaza (2HA)	7,349.5	1,635	23	25	1962
5. Goddard Riverside (11WS)	1,160.0	193	27	50	1967
6. Gouverneur Gardens (6HA)	3,354.0	782	29	30	1964
7. Independence (14WS)	420.0	120	31	50	1967
8. Masaryk Towers (7HA)	5,090.5	1,109	27	30	1967
9. Polyclinic (018)	473.0	142	30	85	1965
10. Residence Hall (013)	301.5	113	25	30	1963
11. River Terrace (844)	2,064.0	430	26	35	1964
12. Riverbend (138)	2,851.0	624	27	40	1968
13. RNA House (8WS)	983.5	207	28	50	1967
14. Strycker's Bay (17WS)	1,096.5	235	24	50	1967

Table 20--Continued

Borough, Project Name and Number	Number of Rooms	Number of Units	Monthly Rent/Room Project ($)	Monthly Rent/Room Estimated Market ($)	Date of Occupancy
A. City Projects--continued					
15. Stuyvesant (824)	476.0	141	25	75	1963
16. Village View (8HA)	5,569.0	1,236	26	40	1964
17. Washington Square (129)	899.0	175	34	85	1967
18. Westview (236)	699.0	140	38	50	1966
19. York Hill (714)	1,205.0	296	30	90	1963
20. York Hill II (715)	500.0	108	30	90	1967
Queens					
1. Aguilar Gardens (814)	1,323.5	256	27	55	1961
2. Big Six Towers (741)	4,772.0	981	24	50	1963
3. Cedar Manor (4HA)	932.5	216	25	35	1961
4. Dayton Beach Park I (221)	5,460.0	1,140	28	40	1964
5. Dayton Towers (221A)	7,326.0	1,752	28	40	1967
6. Forest Park Cr. (933)	1,340.0	240	29	55	1965
B. State Projects[a]					
Bronx					
1. Arlyne Gardens	905.7	181	32	40	
2. Bronx Park East	1,506.2	323	34	40	
3. Concourse Village	9,013.0	1,883	28	30	
4. Jamie Towers	2,812.0	624	27	30	
5. Lafayette	4,532.5	900	32	35	
6. Mark Terrace	1,070.0	209	32	35	
7. Mayflower Terrace	579.2	120	30	45	
8. Morris Heights	748.5	147	32	40	
9. McKinney-Carnes	491.0	111	27	30	
10. Oak Towers	536.7	100	30	40	
11. Orloff Towers	940.5	189	30	55	
12. Park Reservoir	1,227.7	275	22	55	
13. Parkside	740.5	167	23	45	
14. Stratford Tower	464.5	129	29	30	
15. Tower Gardens	966.5	209	26	35	
16. Trio Apartments	1,176.5	240	29	30	
17. Waldo Apartments	729.5	173	28	55	
18. Winthrop Gardens	1,684.5	339	30	45	
19. Woodlawn Apartments	481.5	100	24	45	
Brooklyn					
1. Brightwater	3,950.3	738	30	60	
2. Ebbets Field	6,008.5	1,321	31	35	
3. Fairfield Towers	5,478.3	1,148	31	35	
4. Gorman Apartments	1,644.7	342	24	30	
5. Jewish Hospital	513.5	142	26	45	
6. Jimerson Apartments	2,056.5	423	21	30	
7. Maimonides	401.0	98	30	35	
8. Mutual Apartments	795.5	160	24	40	
9. Stella Baar Celler	436.5	113	24	40	
10. Trump Village I	2,007.8	441	30	60	
11. Trump Village II	2,007.8	441	30	60	
12. Trump Village III	7,859.7	1,674	26	60	
13. Trump Village IV	5,443.7	1,146	26	60	
14. Warbasse Houses	11,406.5	2,595	23	60	
Manhattan					
1. Bridge Apartments	5,040.0	960	31	40	
2. Booth House	567.4	148	25	75	
3. Inwood Gardens	1,141.0	218	25	45	
4. Inwood Heights	909.0	207	23	45	
5. Inwood Terrace	902.0	205	25	45	
6. Inwood Tower	978.2	190	25	45	
7. Isabella House	1,293.0	306	25	40	
8. Nagle House	764.0	180	28	45	
9. River View Towers	2,030.3	386	27	35	
Queens					
1. Green Houses	296.0	72	26	55	
2. Kissena Apartments	432.5	136	26	65	
3. Nordeck Apartments	1,527.0	342	23	40	
4. Rochdale Village	26,490.0	5,860	21	35	

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[a] Project numbers and occupancy dates not included.

Table 21

OCCUPIED PROJECTS BY ESTIMATED MARKET RENTS
(June 1968)

Estimated Market Rent ($/Room/Mo)	All		City		State	
	No. of Projects	No. of Units	No. of Projects	No. of Units	No. of Projects	No. of Units
25-34	21	13,339	14	9,587	7	3,752
35-44	40	24,407	23	11,644	17	12,763
45-54	35	7,984	25	6,116	10	1,868
55-64	18	9,446	8	1,702	10	7,744
65 and over	9	1,747	7	1,463	2	284
All Rents	123	56,923	77	30,512	46	26,411

Table 22

OCCUPIED PROJECTS BY BOROUGH[a]
(June 1968)

Borough	All		City		State	
	No. of Projects	No. of Units	No. of Projects	No. of Units	No. of Projects	No. of Units
Bronx	52	13,779	33	7,360	19	6,419
Brooklyn	32	19,474	18	8,692	14	10,782
Manhattan	29	12,675	20	9,875	9	2,800
Queens	10	10,995	6	4,585	4	6,410
All NYC	123	56,923	77	30,512	46	26,411

[a] None located in Richmond.

Appendix D

DATA ON SAMPLE OF CITY MITCHELL-LAMA UNITS

Since we do not have family characteristics for all households residing in Mitchell-Lama units, we are unable to estimate net and gross tenant benefits directly for all units. We do, however, have sufficient detail to estimate tenant benefits for a sample of 4231 Mitchell-Lama units. We used the sample estimates to infer tenant benefits of all projects in Secs. II and III and to show the distribution of benefits by family characteristics in Sec. IV. We discuss these data now. Our method of inference is discussed later in this Appendix.

DATA SOURCES AND DESCRIPTION

A prospective participant in NYC's Mitchell-Lama program must fill out a detailed application form containing the following information: number of persons in household; relationship to head; age, sex, and occupation, for each member of household; number of persons employed; total earnings from wages; and total income. Project characteristics are also given: project identification number, number of buildings, and number of units. And characteristics of the apartment to which the applicant is assigned are given: number of rooms, number of bedrooms, basic monthly rent or carrying charge (i.e., shelter rent) and gross monthly rent or carrying charge.

Dwelling unit and project features are taken from Mitchell-Lama company records. The applicant provides all other data, which are subject to verification by the housing company. Family size is the basis for calculating income limits and it, together with age and sex of members, affects space requirements and apartments assignments. HDA checks these variables carefully.

The most important and potentially least reliable variable is family income. Because of its significance, however, HDA has a detailed system of safeguards for the housing companies to follow. Each applicant must furnish an affidavit attesting to gross family income for the preceding year. In addition, each employed applicant, and each employed member of the family group who resides with the applicant, must give further proof by supplying a copy of the W-2 form filed by him for the preceding year (or a statement from his employer setting forth his current rate of income and his total income for the preceding year) and his federal income tax return for that year.

Although income from sources that must be reported to the Federal Government and from transfer payments (such as Social Security, unemployment benefits, and welfare payments) are included in the total income figure on the application, gifts are not. This chiefly affects one-person households with small taxable incomes, who rely on support from children or other relatives. The existence of funds sufficient to meet rent payments is established before admission is approved, but the amount of actual income is not recorded in those instances in which gifts are important. It was not possible to adjust the reported incomes to include gifts. It was arbitrarily decided, however, to remove records for which project rent exceeded reported income. This caused a loss of 24 records, which brought us to our sample of 4231. It is likely, nevertheless, that some family incomes are understated.

The 4231 applications used in analyzing the Mitchell-Lama program were all filed in 1967. They had been approved by the Mitchell-Lama companies and by HDA. Of the 24 City projects on which data are available, four were available for occupancy in 1966, 19 in 1967, and one in 1968. Although it is not possible to know whether all sample applicants actually became residents, rough calculations indicate that only 2 percent did not. In any case the applications certainly display the characteristics of City Mitchell-Lama residents and units. Unfortunately, we do not have comparable data on State projects. Table 23 shows the distribution of sample units by borough.

Some adjustments to the raw data were made. In the summer of 1968, many project rents were raised, but the rent information in the original sample applications does not reflect this change; therefore, we adjusted these rents for the projects that received rent increases. Income reported on the application was the tenant's 1966 income, so we adjusted the income figures to 1968 dollars via the consumer price index for the New York SMSA. This does not, of course, capture real income increases that may have occurred.

Table 23

DISTRIBUTION OF SAMPLE UNITS BY BOROUGH

Borough	Projects	Units
Bronx	14	1248
Brooklyn	3	415
Manhattan	6	1601
Queens	1	967
Total	24	4231

To estimate tenant benefits, we need estimates of market rents for the sample units. We use the Kristof-Talmas market rent estimates discussed in Appendix C. Recall that these estimated market rents are project averages--market rent per room; we do not have market rent estimates for particular units in a project. To obtain such an estimate, we multiply the appropriate rent-per-room average by the number of rooms of our sample unit. This method undoubtedly overestimates the rent of some units and underestimates others. For example, units on higher floors usually command more rent than those on lower floors, units with better views command more rent than those with poorer views, and so on. Clearly, we are unable to capture such distinctions with our market rent estimates. In addition, since the Kristof-Talmas estimates are on a per-room basis, the market rent estimates per unit may tend to overestimate rents of units with several rooms and underestimate rents of units with fewer rooms if there are economies associated with larger apartments. Nevertheless, despite these qualifications, the Kristof-Talmas estimates are the only ones available and we use them in estimating the market rents of our sample units.

The last 13 pages of this appendix contain data on project number, project rent, market rent, income, family size, and age and sex of household head for 4231 sample units. By matching project numbers given here with those in Appendix C, additional information on the projects in which the sample units are located is provided (project name, total rooms, total number of units, average monthly project rent per room, estimated average monthly market rent per room, and occupancy date).

Each 20-character line on the printouts at the end of this Appendix gives this information for one dwelling unit and its occupants:

Column	Information
1-3	Project number (first three digits only, if project number exceeds three digits).
4-7	Annual project rent (in dollars, no decimal).
8-11	Annual estimated market rent (in dollars, no decimal; obtained by multiplying estimated average monthly market rent per room by number of rooms in unit).
12-16	Annual tenant income (in dollars, no decimal).
17	Family size.
18-19	Age of household head.
20	Sex of household head: 1, if male; 2, if female.

We now discuss our method of inferring net tenant benefits for all projects from the sample data.

USING SAMPLE DATA TO INFER NET TENANT BENEFITS FOR ALL PROJECTS

In Secs. II and III, we present estimates of net tenant benefits for all 123 City and State projects. Since our formula for estimating these benefits requires information on income, rent-income ratio, project rent, and market rent for each household and its dwelling unit, we were unable to estimate these benefits directly for all projects. However, we did estimate net tenant benefits for the 4231 sample units for which we had the requisite information. We used this information in Sec. IV to show the distribution of net tenant benefits by family characteristics. Since we had data on project rent and the Kristof-Talmas estimates for market rent, we were also able to estimate the tenant subsidy for each of our sample households.

We found that the average ratio of net tenant benefits to tenant subsidy for the sample households was 0.84342. We assume that this average ratio for the sample units is a good approximation to the average ratio of net tenant benefits to tenant subsidy for all Mitchell-Lama units. We do not claim that the ratio would be a good approximation for any single Mitchell-Lama household. Fortunately, we do not have to claim this for our purposes.

Since we can compute the total tenant subsidy for each project, we can multiply the sample ratio of 0.84342 times the project's tenant subsidy to obtain an estimate of net tenant benefits for each of the 123 projects. In this manner we obtained the net tenant benefit estimates shown in the tables in Secs. II and III.

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Appendix E

METHODOLOGY AND DATA FOR ANALYSIS OF NEIGHBORHOOD UPGRADING

The sample for the analysis of neighborhood upgrading consists of 51 neighborhoods in which 62 City Mitchell-Lama projects are located. Although there are only City projects in this sample, it is probably true that if neighborhood effects exist for City projects they exist for State projects as well. There are fewer neighborhoods than there were occupied Mitchell-Lama projects in 1968. This is so for two reasons. In several instances projects were built so closely together that it would have made no sense to regard them as being located in different neighborhoods. Also, in collecting the data, omissions were discovered and projects had to be eliminated.

The neighborhoods encompass an area of from one to three City blocks around the project site but omit the project site. The neighborhood size depended in part on project size and on topographical considerations. There is no theory to aid in determining the appropriate neighborhood size. There is, however, one empirical investigation of reaction to proposed zoning changes which concludes the perceived effects of such changes do not extend beyond one-eighth to one-quarter of a mile.* In addition, Grebler used three blocks in his study of public housing. The greatest danger would be that of underestimating neighborhood effects by choosing too large an area. Thus the choice of three city blocks.

The control area is the neighborhood's borough. This is not an ideal control; preferably, one would want an area identical to the Mitchell-Lama neighborhood in every respect but one--that being the absence of a Mitchell-Lama project. It would be impractical to achieve this ideal given the nature of the data and the collection job involved. In any event, the sample neighborhoods are small relative to their borough; in no case does the total assessed value of *all* Mitchell-Lama sample neighborhoods in a borough exceed 5 percent of that borough's assessed value.

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*T. N. Tideman, "Three Approaches to Improving Urban Land Use," unpublished Ph.D. dissertation, University of Chicago, 1969.

Once the neighborhoods were delimited, a listing of property by tax block was obtained. The tax block in which the project itself was located was noted so that the assessed value of that block would not be included in the neighborhood's assessed value. In some cases the location of the project was known more exactly and then only the assessed value of those portions of the tax block containing the project was excluded. The total,[*] corrected[**] assessed values of each Mitchell-Lama neighborhood for two points in time were then collected from borough tax offices. The time span for each sample neighborhood was not the same, of course, since projects were built at different times.

To avoid capturing project "announcement effects" on surrounding property values, we recorded assessments for the year before the paperwork on the project began. (In a few cases, data were unavailable for that year, so we used information for the year preceding project occupancy.) The terminal year was fiscal 1968-69 for all sample projects .

In addition to the neighborhood assessed value, the borough assessed value was also obtained for the same two years used for each Mitchell-Lama neighborhood. Subtracting the earlier assessed valuation from the later, we obtained the change (positive or negative) in assessed valuation over the period. This was then expressed as a percentage of the earlier assessed value to give us the percentage change over the period. Dividing this by the number of years for which the observation was made yielded the average percentage change in the neighborhood or borough assessed valuation.[***]

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[*] Tax-exempt plus non-tax-exempt properties, the rationale being that tax-exempt properties are also susceptible to upgrading.

[**] Only corrected assessed values were used; that is, after a landowner or someone else had contested the tax-assessor-determined value and a corrected value had been entered.

[***] Table 24 contains assessed valuation of Mitchell-Lama neighborhoods in the prior year and in 1968-1969 by borough. Borough assessed valuations are presented in Table 25. All Mitchell-Lama neighborhoods used in the analysis are listed by tax block in Table 26.

In New York City property is supposed to be assessed at 100 percent of market value and the assessment reviewed every year.* Nevertheless, assessed values are typically less than market values and the ratio of assessed value to market value varies somewhat among boroughs and among types of property. Moreover, it appears that the ratio declined slightly over the 1956-1965 period.** If this is true, it would tend to bias the data against the hypothesis of neighborhood upgrading. In any event, there is no doubt that for any large group of parcels, assessed value and market value are positively correlated, which is all we need to detect neighborhood upgrading.*** Other studies have also used assessed value for the same purpose.****

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*"It is the duty of the assessors, under the direction of the President [of the Real Property Assessment Department], to assess for taxation all real property in the several districts that may be assigned to them by the President. The assessors are required to furnish the President, under oath, a detailed statement of all taxable real estate, certifying that they have personally examined each and every house, building, lot, pier, or other taxable property. The detailed statement in addition to including pertinent descriptive matter relative to the real estate embraced within the assigned districts, states the sum for which--in the assessor's judgment--each separately assessed parcel of real estate would sell under ordinary circumstances." *The Annual Report of the Tax Commission and the Real Property Assessment Department,* City of New York, New York, 1966. Quoted in A. M. Frame, *New York City Real-Property Tax: A Review,* report prepared for Citizens Union Research Foundation, Inc., March 1967, p. 4.

**Frame, pp. 6-10, Tables 1-4.

***Evidence favorable to this expectation is provided in O. A. Davis and K. L. Wertz, "The Consistency of the Assessment of Property: Some Empirical Results and Managerial Suggestions," *Applied Economics,* Vol. 1, No. 2, 1969, pp.151-157; and in S. Czamanski, "Effects of Public Investments on Urban Land Values," *AIP Journal,* Vol. 32, No. 4, July 1966, pp. 204-217.

****Grebler; W. R. Seyfried, "The Centrality of Urban Land Values," *Land Economics,* Vol. 39, No. 3, August 1963, pp. 275-284; and J. S. Kieper, et al., *Theory and Measurement of Rent,* Chilton Co., Philadelphia, 1961, Chs. 10, 11.

Table 24

ASSESSED VALUATION OF MITCHELL-LAMA NEIGHBORHOODS IN PRIOR YEAR AND IN 1968-1969, BY BOROUGH

Borough and Project Names	Prior Year	Assessed Value ($)		Average % Change Per Year
		Prior Year	1968-1969	
Bronx				
1. Branford	1962-63	10,321,975	16,383,900	9.79
2. Hutchinson	1958-59	7,221,500	48,171,600	56.71
3. Fordham Towers	1963-64	7,015,600	7,263,900	0.71
4. Bronxwood Towers	1959-60	4,660,500	6,332,500	3.99
5. Kingsbridge Terrace	1960-61	12,058,950	18,468,350	6.64
6. Adee	1956-57	10,687,250	11,947,300	0.98
7. Allerville and Lind Ric	1959-60	13,411,400	27,826,500	11.94
8. Bruckner, Carol Gardens and Leland	1959-60	951,300	8,310,600	85.96
9. Boulevard	1960-61	6,329,350	9,293,150	5.85
10. Chatterton	1960-61	6,416,825	10,039,100	7.06
11. Woodstock	1960-61	26,010,800	41,316,500	7.36
12. Dennis Lane	1956-57	8,647,110	10,578,410	1.86
13. Lindville	1962-63	3,468,800	4,704,900	5.94
14. Tilden	1962-63	6,555,235	8,106,050	3.94
15. Adelphi and Delos	1963-64	22,747,700	25,293,100	2.24
16. Montefiori	1961-62	21,944,350	35,015,100	8.51
17. Noble Mansion	1961-62	2,081,550	2,497,550	2.86
18. Robert Fulton	1963-64	34,651,140	30,150,680	-2.60
19. Cloverleaf	1963-64	4,442,300	5,004,800	2.53
20. Evergreen	1962-63	3,643,500	4,607,500	4.41
Brooklyn				
1. Luna Park	1959-60	10,264,210	36,280,350	28.16
2. Lindsay Park	1959-60	26,799,950	37,230,700	4.32
3. Highlawn	1957-58	9,582,200	11,610,100	1.92
4. Sam Burt	1962-63	3,837,100	4,282,050	1.93
5. Prospect	1962-63	12,207,800	12,411,200	0.28
6. Atlantic Plaza	1962-63	13,799,375	20,220,925	7.76
7. Kings Bay	1957-58	5,180,845	25,035,720	34.84
8. Contello I, II and III	1958-59	2,829,750	6,428,475	12.72
9. Harway	1958-59	1,098,850	4,065,675	27.00
10. Cadman Plaza	1963-64	6,137,600	5,455,700	-2.22
11. Pratt, St. James and Ryerson	1959-60	29,039,450	41,228,950	4.66
Manhattan				
1. Goddard Riverside, Independence House, Strycker's Bay, RNA House, Westview, and Columbus Towers	1962-63	106,539,300	138,611,500	5.02
2. Washington Sqaure	1962-63	58,430,400	64,685,600	1.78
3. Riverbend	1962-63	41,436,300	65,099,700	9.52
4. Esplanade	1962-63	13,214,500	15,934,000	3.43
5. The Stuyvesant	1958-59	41,321,500	93,277,000	12.57
6. Clayton	1959-60	49,651,800	103,681,270	12.09
7. York Hill I	1958-59	58,187,300	129,833,500	12.31
8. York Hill III	1962-63	49,402,000	71,429,000	7.43
9. Polyclinic	1962-63	94,189,300	120,966,800	4.72
10. Masaryk	1962-63	43,351,100	47,813,400	1.72
11. Gouverneur	1960-61	54,266,800	67,454,900	3.04
12. River Terrace	1958-59	44,636,300	55,873,000	2.52
13. Village View	1959-60	27,546,000	33,317,200	2.33
14. Franklin Plaza	1959-60	22,663,300	38,265,950	7.65
15. Residence	1960-61	45,591,000	51,376,000	1.59
Queens				
1. Aguilar Gardens	1957-58	38,924,050	41,925,800	0.70
2. Big Six Towers	1957-58	1,484,525	2,575,150	6.68
3. Cedar Manor	1957-58	726,075	4,568,200	48.11
4. Forest Park	1960-61	3,699,700	3,821,600	0.41
5. Dayton Towers III	1963-64	13,944,010	17,414,500	4.98

Table 25

BOROUGH ASSESSED VALUES, TAXABLE AND EXEMPT PROPERTIES, 1956-1957 TO 1968-1969

(In $ thousand)

Year	Manhattan	Bronx	Brooklyn	Queens
1956-1957	13,041,236	3,565,141	6,753,115	5,746,739
1957-1958	13,426,690	3,687,387	6,970,746	5,960,446
1958-1959	14,130,138	3,919,407	7,226,225	6,323,478
1959-1960	14,606,965	4,054,048	7,607,054	7,141,427
1960-1961	15,267,510	4,257,644	7,979,915	7,603,258
1961-1962	16,024,274	4,518,694	8,274,994	8,079,176
1962-1963	16,811,855	4,730,478	8,573,655	8,578,487
1963-1964	17,742,038	5,008,842	8,961,439	9,250,235
1964-1965	18,484,803	5,229,427	9,305,684	9,780,417
1965-1966	19,105,082	5,475,166	9,720,796	10,269,966
1966-1967	19,551,052	5,672,231	9,997,842	10,487,539
1967-1968	20,152,489	5,799,666	10,272,208	10,706,357
1968-1969	20,968,879	5,954,980	10,463,637	10,881,569

Table 26

NEIGHBORHOODS BY TAX BLOCK AND BOROUGH

Bronx	Bronx	Brooklyn	Brooklyn	Manhattan	Manhattan	Queens
1. Branford 3747,3748,3750,3751, 3752,3760,3761,3762, 3780,3781,3782,3783, 3784,3785,3870,3871, 3872,3873,3874,3875	10. Chatterton Terrace 3787,3788,3789,3797, 3798,3799,3806,3807, 3808,3815,3816,3817	1. Luna Park 6995,6996,7021,7022, 7023,7062,7063,7064, 7074,7075,7247,7248, 7250,7269,7270,7429, 8694,8695,8696	7. Kings Bay 7423,7424,7425,7427, 7428,7429,7446,7451, 7452,7475,7476,7477, 7478,7479,7480,7481, 7543,7544,8837	1. Goddard Riverside, Independence House, Strycker's Bay, RNA House, Westview, and Columbus Towers 1204,1205,1206, 1207 (part), 1208, 1209,1221,1222,1223, 1224 (part), 1225 (part), 1226 (part), 1238,1239,1240,1241, 1242,1243,1832,1833, 1851,1868,1869,1870, 1871	8. York Hill II 1515,1516,1517,1518, 1532,1534,1535,1549, 1550,1551,1552	1. Aguilar Gardens 6789,6792,6793 (part), 6797,6798, 6799,6800,6801,6802, 6805,6821,6822,6832, 6833,6843,6844
2. Hutchinson 4159,4188,4190,4191, 4192,4193,4194,4226, 4230 (part), 4231, 4232,4233,4234,4240, 4241,4242,4243,4244	11. Woodstock 2630,2631,2632,2637, 2638,2639,2647,2648, 2656,2657,2658,2666, 2667,2668,2669	2. Lindsay Park 2208,2214,2221,2228, 2234,2238,2242,2243, 2246,2247,2250,2251, 2266,2267,2269,2270, 2272,2273,2274,2276, 2425,2438,2439,2451, 2452,2464,2465,3031, 3032,3040,3041,3042, 3043,3044,3049,3050, 3051,3052,3053,3061, 3062,3068,3070,3071, 3079,3080,3081,3085, 3086,3087,3088,3089, 3096,3097,3104,3105, 3106,3112,3113,3114, 3119,3120,3126,3127	8. Contello Towers I, II, and III 6910,6911,6912,6913, 6914,6915,6916,6917, 6934,6936,6938,6939, 6940	2. Washington Sqaure 511,512,513,514,515, 516,517,518,522,523, 525,526,529,530,532, 533,537,539,540	9. Polyclinic 1020,1021,1022,1023, 1024,1039,1040,1041, 1042,1043,1058,1059, 060,1061,1062	2. Big Six Towers 2313,2318,2319,2320, 2321,2327,2328,2329, 2330
3. Fordham Towers 3040,3041,3042,3055, 3056,3057,3058	12. Dennis Lane 3070,3080,3081,3082, 3094,3095,3096,3097, 3098	3. Highlawn Terrace 6674,6675,6676,6677, 6678,6679,7082,7083, 7085,7086,7099,7100, 7101,7102	9. Harway Terrace 6905,6918,6919,6924, 6953,6954,7185,7205, 7225	3. Riverbend 1733,1734,1735,1736, 1737,1739,1740,1760, 1761,1765,1766	10. Masaryk Towers 331,332,334,335,336, 337,338,339,340,341, 342,343,344,345,346, 347,348,349,350	3. Cedar Manor 12191,12193,12197, 12198,12199,12235, 12236,12237
4. Bronxwood Towers 4856,4857,4867,4868, 4975,5000,5001,5002, 5003,5004,5005,5006, 5007	13. Lindville 4641,4642,4643,4645, 4646,4647	4. Sam Burt 6956,6958,6962,6963, 6971,6974,6977,6978, 6979,6980,7000	10. Cadman Plaza 207,210,211,215,216, 217,220,221	4. Esplanade 1743,1744,2014,2015, 2031,2032,2033,2034, 2035,2036	11. Gouverneur 245,246,247,256,257, 258 (part), 260, 262,263,264,265,266, 267 (part), 269,270, 271,284,285,286,287, 288,611	4. Forest Park 3848,3849,3850,3861, 3862,3863,3878,3879, 3880 (part), 3881
5. Kingsbridge Terrace 3253,3256 (part), 3259,3260	14. Tilden Towers 4657,4658,4659,4660, 4661,4662,4670,4671, 4672,4673	5. Prospect Towers 997,998,999,1003, 1004,1005,1009,1010, 1011,1015,1016,1017, 1021,1022,1023	11. Pratt, St. James and Ryerson 1916,1917,1918,1919, 1920,1921,1922,1923, 1924,1925,1926,1930, 1931,1932,1938,1939, 1940,1944,1945,1946, 1947,1948,1949,1951, 1952,1953	5. The Stuyvesant 455,469,896,897,898, 899,900,921,922 (part), 923,924,925	12. River Terrace 2114,2115,2116,2117, 2118,2119,2120,2122, 2135,2136,2137	5. Dayton Towers III 16155,16156,16157, 16158,16159,16160, 16161,16162,16172, 16173,16174,16176, 16177,16178
6. Adee Towers 4542,4543,4544,4545, 4546,4547,4568,4569	15. Adelphi and Delos 2877,2878,2880	6. Atlantic Plaza 1433,1435,1440,1441 1442,1447,1448.1449, 1453,1454,1455,1459, 1460,1461,1550,1551, 1552,1562,1563,1564, 1565,1566,1567,1568, 1569,1570		6. Clayton Apartments 1729,1730,1733,1734, 1735,1916,1917,1918, 1919 (part), 1920, 1921,1937,1938,1939, 1940,1941,1942,2006, 2023,2028	13. Village View 391,398,399,400,401, 402,428,429,430,431, 432 (part), 434,442, 443,444,445,446,447, 448	
7. Allerville and Lind Ric 4340,4341,4342,4424, 4425,4426,4427,4428, 4429,4506,4507,4508	16. Montefiori 3326,3327,3337,3338, 3339,3343,3344			7. York Hill I 1559,1560,1561,1562, 1563,1564,1565,1576, 1577,1579,1580,1581, 1582,1589,1590,1598	14. Franklin Plaza 1632,1633,1634,1635, 1636,1637,1654,1655, 1656,1659,1676,1677, 1680,1681	
8. Bruckner, Carol Gardens, and Leland 3600,3601,3602,3603, 3641,3643,3644,3645, 3667,3671	17. Noble Mansion 3895,3911,3913,3914, 3915,3917,3918				15. Residence 1604,1605,1606,1607, 1608,1609	
9. Boulevard Towers 3678,3679,3680,3681, 3682,3684,3685,3686, 3687,3688,3690,3691, 3692,3693,3694,3696, 3697,3698,3699,3700	18. Robert Fulton 2372,2373,2389,2390, 2609,2611,2612,2901, 2910,2926,2932					
	19. Cloverleaf 3633,3636,3660,3661, 3662					
	20. Evergreen 3621,3622,3623,3624, 3625,3647,3648,3651 3652					

Appendix F

TAX EXEMPTION DATA

Mitchell-Lama projects are assessed by the City's Real Property Assessment Department. Assessed valuation as well as the amount of exempted assessed valuation are reported in tax books located in borough offices throughout the City. The rate of exemption (exempt assessed value as a percentage of total assessed value) is proposed by HDA and approved by the Board of Estimate (BOE).

We obtained the assessed values and exempt assessed values for the entire set of 77 City and 46 State projects in occupancy in 1968. In doing so we checked tax book information against HDA records and ironed out discrepancies with HDA personnel. In addition, our data incorporate recent changes in exemptions approved by the BOE in April and August of 1968, changes that had not been recorded in the tax books.

To obtain the City cost of the Mitchell-Lama property tax exemption, we applied the City property tax rate ($5.218 per $100 of assessed valuation for 1968-69) to the exempt portion of each project's assessed valuation. Table 27 contains these data and exemption rates for all City and State projects.

Table 27

TAX EXEMPTION AND PERCENTAGE TAX EXEMPTION OF CITY AND STATE MITCHELL-LAMA PROJECTS, 1968-1969

Borough and Project Names	1968-1969 Tax Exemption	Percentage Tax Exemption
A. City Projects		
Bronx		
1. Adee Towers	$ 82,340	40
2. Adelphi House	62,616	60
3. Allerville Arms	78,270	50
4. Boulevard Towers	93,924	50
5. Bronxwood Tower	45,788	65
6. Bruckner Tower	70,443	50
7. Candia House	39,787	50
8. Cannon Heights	52,180	40
9. Carol Gardens	101,099	50
10. Chatterton Terrace	55,115	65
11. Cloverleaf Towers	72,008	50
12. Corlear Gardens	40,179	50
13. Delos House	43,440	50
14. Dennis Lane	92,698	55
15. Evergreen Gardens	150,852	70
16. Fordham Towers	46,962	50
17. Hugh Grant	45,000	100
18. Hutchinson	40,700	40
19. Kingsbridge Gardens	107,008	70
20. Kingsbridge Terrace	30,528	40
21. Leland House	220,252	70
22. Lind-Ric Apartments	60,985	55
23. Lindville	80,228	75
24. Montefiore	70,443	100
25. Nathan Hale Gardens	123,223	50
26. Noble Mansion	80,879	50
27. Robert Fulton	90,532	50
28. Rosedale Gardens	297,948	80
29. Schuyler House	86,493	75
30. Scott Tower	128,937	50
31. Tibbet Towers	71,748	50
32. Tilden Towers	44,353	50
33. Woodstock Terrace	258,604	100
Brooklyn		
1. Atlantic Plaza	256,987	50
2. Cadman Plaza	115,448	50
3. Contello Towers I	82,966	40
4. Contello Towers II	46,962	40
5. Contello Towers III	88,289	40
6. Harway Terrace	144,873	55
7. Highlawn Terrace	29,743	40
8. Kings Bay I	133,309	40
9. Kings Bay II	103,316	40
10. Lindsay Park I	378,284	80
LL. Lindsay Park II	581,494	80
12. Lindsay Park III	384,254	80
13. Luna Park	1,463,962	80
14. Pratt Towers	196,302	80
15. Prospect Towers	67,051	50
k5. Ryerson Towers	194,318	80
17. St. James Towers	194,736	80
18. Sam Burt Houses	62,238	65
Manhattan		
1. Clayton Apartments	63,242	60
2. Columbus Towers	109,578	75
3. Esplanade Gardens	485,274	50
4. Franklin Plaza	1,176,346	100
5. Goddard Riverside	99,794	65
6. Gouverneur Gardens	545,803	80
7. Independence	34,439	50
8. Masaryk Towers	771,841	80
9, Polyclinic	49,571	50
10. Residence Hall	63,660	100
11. River Terrace	237,744	70
12. Riverbend	172,434	64
13. RNA House	101,751	65
14. Strycker's Bay	134,415	70
A. City Projects--continued		
15. Stuyvesant	$ 89,750	100
16. Village View	688,776	80
17. Washington Square	93,924	50
18. Westview	54,789	50
19. York Hill I	87,349	40
20. York Hill II	20,872	40
Queens		
1. Aguilar Gardens	75,139	40
2. Big Six Towers	366,700	40
3. Cedar Manor	174,803	80
4. Dayton Beach Park I	393,620	50
5. Dayton Towers	576,500	50
6. Forest Park Cr.	56,824	30
B. State Projects		
Bronx		
1. Arlyne Gardens	49,279	40
2. Bronx Park East	79,835	40
3. Concourse Village I	669,209	50
4. Jamie Towers	203,893	50
5. Lafayette	278,328	45
6. Mark Terrace	58,859	40
7. Mayflower Terrace	29,325	40
8. Morris Heights	37,570	40
9. McKinney-Carnes	27,760	40
10. Oak Tower	27,551	40
11. Orloff Towers	56,876	40
12. Park Resevoir	11,695	40
13. Parkside	41,212	40
14. Stratford Tower	30,264	50
15. Tower Gardens	57,815	40
16. Trio Apartments	73,835	50
17. Waldo Apartments	43,831	40
18. Winthrop Gardens	118,057	50
19. Woodlawn Apartments	29,430	40
Brooklyn		
1. Brightwater Towers	279,163	50
2. Ebbets Field	340,944	40
3. Fairfield Towers	378,279	50
4. Gorman Apartments	81,401	40
5. Jewish Hospital	66,530	100
6. Jimerson Apartments	102,899	40
7. Maimonides	20,872	100
8. Mutual Apartments	42,996	40
9. Stella Baar Celler	73,052	100
10. Trump Village I	147,409	50
11. Trump Village II	148,713	50
12. Trump Village III	546,586	50
13. Trump Village IV	379,610	50
14. Warbasse House	992,725	45
Manhattan		
1. Bridge Apartments	287,616	40
2. Booth House	83,488	100
3. Inwood Gardens	62,616	40
4. Inwood Heights	51,658	40
5. Inwood Terrace	53,015	40
6. Inwood Tower	52,180	40
7. Isabella House	286,990	100
8. Nagle House	42,370	40
9. River View Towers	111,665	40
Queens		
1. Green Houses	47,484	100
2. Kissena Apartments	100,186	100
3. Nordeck Apartments	95,072	40
4. Rochdale Village	2,156,782	50

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